Construction Monthson Monthson

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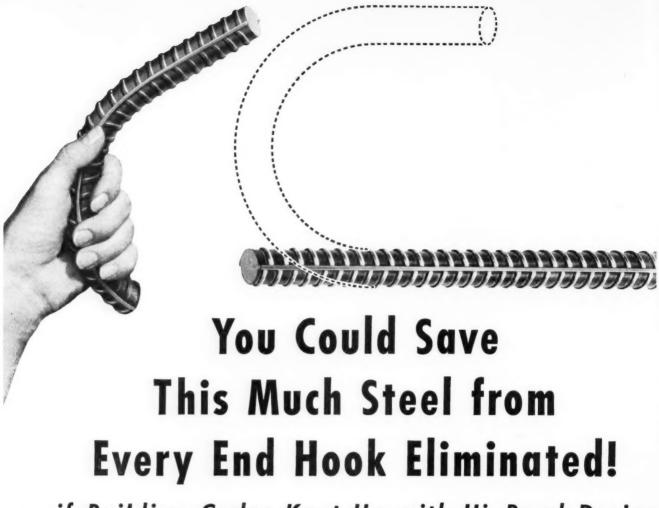
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pal cities

Desperate measures—thrawing steel trusses into roaring gap that couldn't be closed otherwise—mark successful 56-hr. fight to divert Colorado River at Davis Dam.

wo Material Pumping Articles: Sand Sluicing at Hyperion Sewage Plant and
Dredging Fill for Columbia River Highway

Also: Highlights of the Road Show



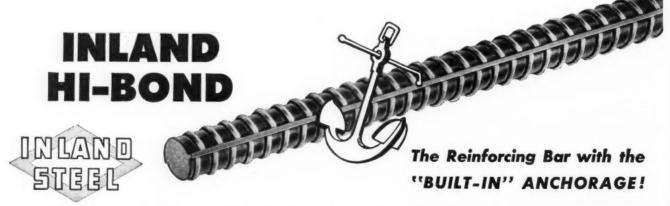
. . if Building Codes Kept Up with Hi-Bond Design

Tests made by the National Bureau of Standards have definitely proved that a straight section of Inland Hi-Bond reinforcing bar provides greater anchorage than hook anchors made of ordinary deformed bars...that with Hi-Bond, hook anchorage is unnecessary in most applications.

Hi-Bond's greater bonding strength is due to its deep, reversed, double-helical ribs that grip the concrete and prevent slippage. As a result of Hi-Bond's development, it will be only a question of time before our national building codes are changed to eliminate end hooks in most cases. The change will mean a saving in steel, a saving in bending costs, and simpler installation.

Hi-Bond also makes it possible to use more of the potential strength of the steel and to take advantage of the higher design stresses that tomorrow's building codes will permit, yet it costs no more than ordinary reinforcing bars.

To make larger tonnages available to you, we have licensed other steel companies to make this superior bar. INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.



OTHER PRODUCTS: BARS . STRUCTURALS . PLATES . SHEETS . STRIP . TIN PLATE . FLOOR PLATE . PILING . RAILS . TRACK ACCESSORIES

Construction Methods WALDO G. BOWMAN, Edito-

THE CONSTRUCTION MAGAZINE WITH PICTURE POWER Established 1919



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Volume 30 AUGUST 1948 Number 8

CUTS AND FILLS

IN THIS ISSUE

IT WAS A GREAT ROAD SHOW-a gigantic display of the armament of construction. Even those close to the equipment manufacturing industry were amazed at the spectacle of so much, so big and so varied machinery and tools spread out in one vast panorama. The 1948 Road Show at Chicago set a new pattern. Never again can the Show be staged in-

EQUIPMENT TRENDS as revealed at the Road Show are in four distinct directions: Toward bigger and bigger units, especially in earthmoving, hauling and aggregate processing; (2) also just the opposite, toward smaller units, such as wheel tractors, bulldozers and loaders; (3) toward highly specialized machines designed to do but one specific job, but to do it well, and (4) again just the opposite, to-ward more versatile and wider-use ma-chines by putting more and more auxiliary equipment on the basic unit.

THESE TRENDS promise an even betterequipped construction industry in the future, a factor that is bound to influence construction costs and efficiency.

PROBABLY GARRISON DAM sounded the knell of big-combination bidding on big jobs, for the shock of 38 contractors combining to submit the low bid of 58 millions for a job estimated by the engineers at 35 millions is enough to discourage engineers from offering work in such large doses for some time to come. Apparently, under present conditions we have topped the limit of contractor groups to take big projects. Nobody wants to stick his financial neck out for six uncertain vears.

SPEAKING OF HIGHWAY SAFETY, an auto trip across this country reveals a lot of road construction and repair under way

HIGH DIVING CRANE takes salt water bath 67 68 PUMPING SAND DUNES from sewage plant site 72 **CONTRACTORS SPARK Construction Industries Show** CITED FOR SERVICE, John R. Austin 73 **HIGHWAY FILL pumped into place** 74 TRAILER-MOUNTED TRANSFORMERS serve dam job 77 **HIGHLIGHTS** of the Road Show 78 TELEVISION TOWER tops tall building 86 TRANSPORTING 162-ft. plate girder span 88 RIVER DIVERSION at Davis Dam 92 NAVY TESTS light diesel pile hammer 95

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with a callous disregard of public safety and convenience. In general traffic handling around and through construction projects is poorly managed. In some cases we found contractors and state maintenance crews alike resentful and even abusive toward the public trying to get

through projects for which detours have not been provided. Some conditions were absolutely dangerous. From a standpoint of public relations alone, both contractors and state highway officials might better treat the public that pays all highway construction and maintenance bills.

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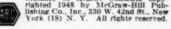
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ESSORIES

HITTING A NEW HIGH...

in low loading



Cost!

Industrial Wheel Tractor with Ware Front End Loader

● The Oliver "70", a streamlined industrial tractor with modern engineering throughout, together with the Ware Front End Loader attachment, is fast becoming a familiar sight around construction jobs that move. It's a tough unit that bites into the high cost of such jobs as hauling, loading, ditching, filling in, or removing snow . . . plus performing a score of other tasks.

Then, too, the Oliver Industrial "70" with the Ware Loader is compact . . . well balanced . . . low to the ground so that it can operate in tight quarters. It makes handling gravel, cinders, loam or other loose material a pushover. Here's a unit that will load up to 8½ feet . . . dump at any height. Substitute a blade for the bucket and you have one of the huskiest, easiest-to-get-around backfillers you've ever seen in operation.

You "go longer" per gallon of fuel because the "70" with the Ware Loader is equipped with the 6-cylinder "Fuel Miser" engine. Drop in at your Oliver Industrial Distributor. Learn first hand about the many new engineering features that will help you hit a new high in lower loading costs!

The **OLIVER** Corporation

INDUSTRIAL DIVISION: 19300 EUCLID AVENUE, CLEVELAND 17, OHIO



A bucket does to the traver when digging but with high prward reach



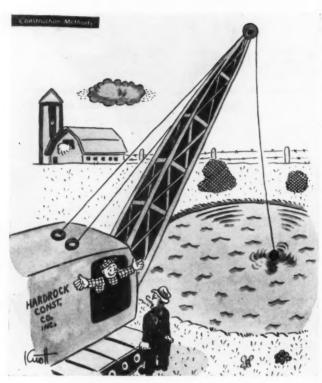
Only one lever havaraulically controls and seem es the bucket!



THE JOB JESTER

CARTOONS DRAWN FOR

CONSTRUCTION METHODS



"Oh, come, come, Baxter . . . don't tell me they're that big."

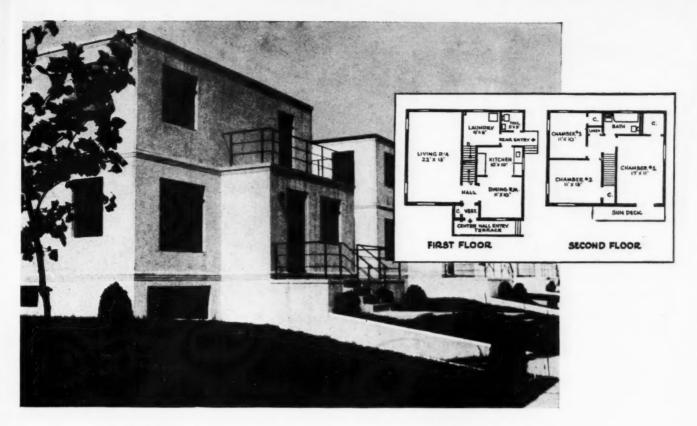


"Somebody down here wants to see you about some business!"



"But, boss, I have to mind him while my wife goes shopping!"





All-Concrete Homes

AT COST OF LESS PERMANENT CONSTRUCTION

HERE is concrete construction at its rigid, rugged, economical best—walls, floors, roof all tied together in monolithic permanence. Outer walls are 8 in. of reinforced concrete, with 1-in. center insulating core of celotex—a 9-in. wall that is as dry as a bone.

Designed by OSCAR EHRLICH, Engineer, 150 of these 2-story-and-basement, all-concrete homes are being built by DRAKE CONSTRUCTION COMPANY at Long Beach, L. I. Houses are poured in pairs. Line-production methods were worked out using Lone Star Air-Entraining Cement for smooth, clean wall surfaces, with 'Incor'* 24-Hour Cement in floors for faster form re-use — and it works like a charm.

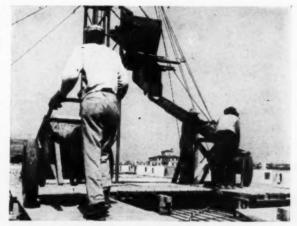
These houses are replete with attractive features, such as streamlined kitchens, but the thing that sells best is the *character* of the construction:

A house that is proof positive against dampness, fire, storm and termites; only \$14.50 a month heating cost last winter, coldest in a long time; not a trace of dampness last Spring, wettest in years, under

seashore exposure; an absolutely firesafe rating, saving 75% on fire-insurance—a house that helps pay its own carrying charges out of savings like these.

Biggest news about these all-concrete homes is the daily proof that people are deeply interested in substance as well as form. Construction ingenuity which gives them both, at no extra cost, is writing new definitions of value.

*Reg. U. S. Pat. Off.





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Here are new Rear-Dump Euclid models for off-the-highway hauling of earth, ore, rock and other heavy excavation on construction and industrial jobs. These "Eucs" have features designed to move materials faster and at lower cost... their simple but rugged construction assures long life under a wide range of operating conditions. Efficient on long or short hauls, they're built to stand the gaff in tough going... and to move more payloads per day. Pacesetters for profits, they'll help finish your jobs on schedule at lowest cost per ton or yard moved.

PO

Payload capacity, 30,000 lbs.

Struck capacity, 9.7 or 11.1
cubic yards

Diesel engine up to 200 h.p.

Travel speeds loaded up to
35.4 m.p.h.

Transmission, 10 speeds forward with 2 reverse speeds
ward with 2 reverse speeds

Air Booster Steering

Drive axle—semi-rigid or
spring mounted

Tire sizes, front 13.00 x 24

Rear duals, 16.00 x 24

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Payload capacity, 44,000 lbs.

Struck capacity, 14.0 or 14.8 cubic yards.

Diesel engine up to 275 h.p.

Travel speeds loaded up to 32.3 m.p.h.

Transmission, 5 speeds forward, 1 reverse or 10 speeds ward, 1 reverse or 10 speeds speeds

Hydraulic Booster Steering

Semi-rigid mounted drive axle

Tire sizes, front 14.00 x 24

Rear duals, 18.00 x 24

The new Euclids have these outstanding features... Air or hydraulic booster steering for ease in handling and positive steering control. Comfortable bucket type driver's seat with hydraulic shock absorber is adjustable for driver's weight and position. Ten speed transmission is available on several models for jobs requiring a wide range of gear selection and faster reverse speeds. Semi-rigid or spring mounting of drive axle... springs for good roads, long hauls and high speeds... semi-rigid mounting for tough hauls where fast travel speeds cannot be attained. Large tires on drive wheels — 16.00 x 24 to 18.00 x 32 duals — for good traction on off-the-road hauls.

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rds The EUCLID ROAD MACHINERY Co. CLEVELAND 17, OHIO



Payload capacity, 60,000 lbs.

Struck capacity, 19.0 cu. yards

275 h.p. Diesel engine

Travel speeds loaded up to
20 m.p.h.

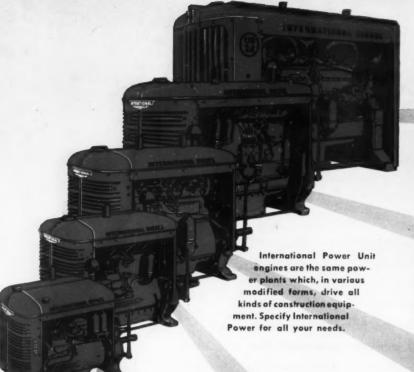
Hydraulic Booster Steering

Semi-rigid mounted drive axle

All tires are 18.00 x 32

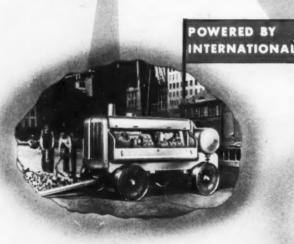
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Dig those extra dividends from all your jobs. Let your International Industrial Power Distributor show you how standardizing on International Power will make your "spreads" produce more profits.

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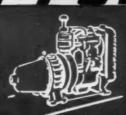


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Industrial Power





from thin Sections and HARD-TO-GET-AT PLACES

TO DAMS AND OTHER Model Exception JACKSON CONCRETE VIBRATORS

Model FS-7A Flexible Shaft, Electric, Excellent for thin sections, Exceptionally powerful for its small size. Available with 24", 36", 7' or 14', shafts—134" x 17" and 2" x 10" heads, grinding attachment.

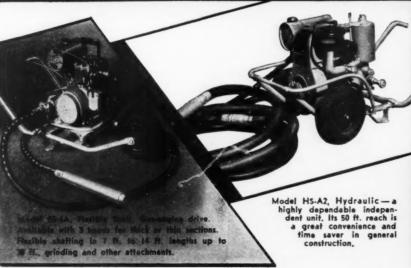
Model VS-4 - virtually a "must" on mass concrete construction.

This vibrator has a tremendously impressive record on nearly all of the Nation's large dam projects.

are available in models ideally suited to each and every concrete construction requirement. Products of more than 25 years of experience and actual service, they provide the maximum of efficiency and reliability. Write for recommendation and complete information on the vibrator that will handle your particular job to best advantage.

The complete line, of which just a few representative models are shown here, includes electric and gas-engine driven flexible-shaft and hydraulic vibrators for general construction, light construction, mass concrete, street and highway paving, floors, form vibrating, product manufacture and other uses.

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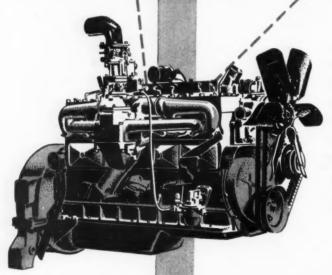
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WORLD'S LARGEST MANUFACTURERS OF ALL-METAL CLUTCH FACINGS AND BRAKE LININGS

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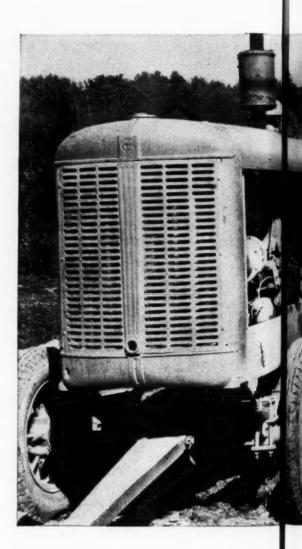
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FOR ALL CONTRACTORS' EQUIPMENT

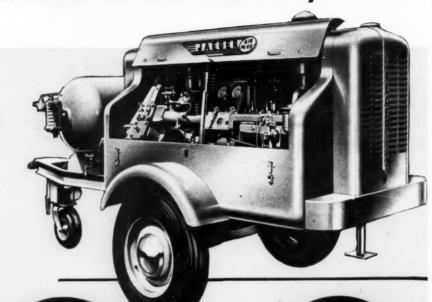
"New Standard" 125 Ft. Compressor does yet sells at old 105 Ft. price...

These "New Standard"

Air-Plus Compressors
deliver more air to run more
tools at full 90 lbs. pressure, yet
cost no more than obsolete
"old standard" sizes:

model 75 cfm

runs a heavy breaker, 2 light breakers or 3 tampers at 90 lbs. pressure — which a model 60 can't do.



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runs 3 heavy breakers or medium rock drills at 90 lbs. pressure which a model 160 can't do. model runs a heavy w

250 cfm

runs 4 heavy breakers, 2 heavy drills or medium wagon drill at 90 lbs. pressure — which a model 210 can't do. runs a heavy wagon drill plus rock drill or heavy breaker at 90 lbs. pressure — which a model 315 can't do.

model

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SCREED FINISHER
— lays flush to high form on pitched slab and superelevated curves, saves 1 to 2 shovelers; finishes smoother, faster behind today's mass-production pavers.



REMIXING, COMPACTING
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screw action positively eliminates
segregation, produces denser, more
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MODEL BP-5 BITUMINOUS PAVER Instant width adjustability 8 to 12½ ft., high speed oscillating compaction and finishing; burn-proof screed heating; straightedge surface equalizing; all traction on subgrade.

40% more work, All Jaeger's new sizes are comparable!



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and does not use an ounce more
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air capacity is not required.

model 600 cfm

runs 2 heavy wagon drills plus heavy rock drill at 90 lbs. pressure — which a model 500 can't do.

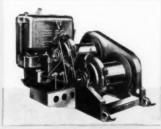
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2-SPEED, ALL-STEEL
HYDRO-HOISTS
Automotive transmission with instant
shift from "Low" to "High" for
speed with lighter loads.
Finger-touch hydraulic control.
Interchangeable gas, electric, diesel.

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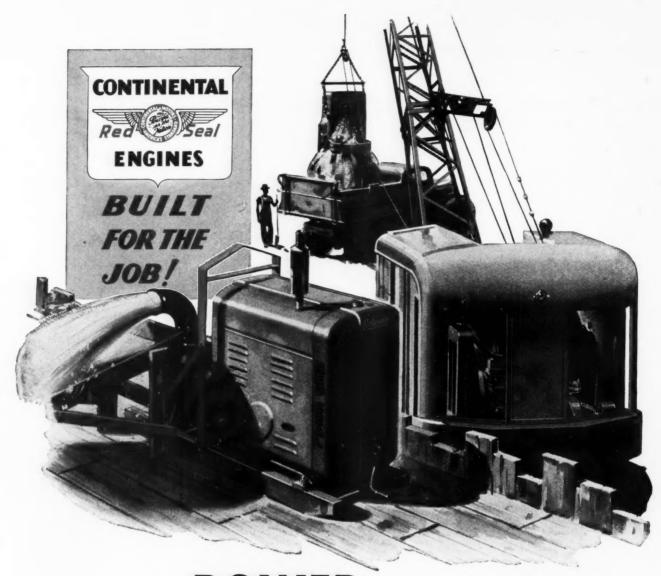
TRUCK PAVERS WITH CONCRETE SPREADERS
The modern, flaxible paving plant that pours half-width slab without detouring traffic, plus widening work, curb, gutter and all concrete structures.



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Famous "Sure Prime" high efficiency, low head pumps for drainage work, 1½ to 10" sizes. Higher head models from 2" to 8" for water supply, jetting, etc.



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Under Punishing Off-Road Conditions

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PROVIDES GREATER UTILITY... A truly versatile tool that easily and economically performs any lift and carry job — a completely-mobile work tool that is not anchored to the jobs by jacks or out-riggers!

not anchored to the jobs by jacks or out-riggers!

The EC-7's compact, heavy-duty electric motors provide plenty of power where needed (1) At the hoist block for capacity-lifting...(2) To raise or lower

the telescopic boom like a fork-lift for work at any height ... (3) And to pivot the elevator track back-ward or forward on the rear-axle for easy crane maneuvering and work flexibility. What's more, instant automatic braking on each motor gives abso lute non-slip control of any load lifted or carried. OPERATES FASTER, EASIER . . . The Tournacrane is both electrically steered and operated. Any man on your crew can learn to operate this rig quickly and efficiently. Operator fatigue due to back-breaking lever and pedal work is eliminated by the simple, effortless operating features of the new Tournacrane. DOES THE JOB CHEAPER . . . This rig does the big jobs cheaper because only one man is needed to efficiently operate the Tournacrane . . . to lift loads, move them, and spot them where needed . . . three big operations performed more quickly and more economically with only one piece of equipment! From every standpoint; initial equipment investment . . . maintenance costs ... time and man-hour cost ... the Tournacrane gives you the highest productivity with the greatest

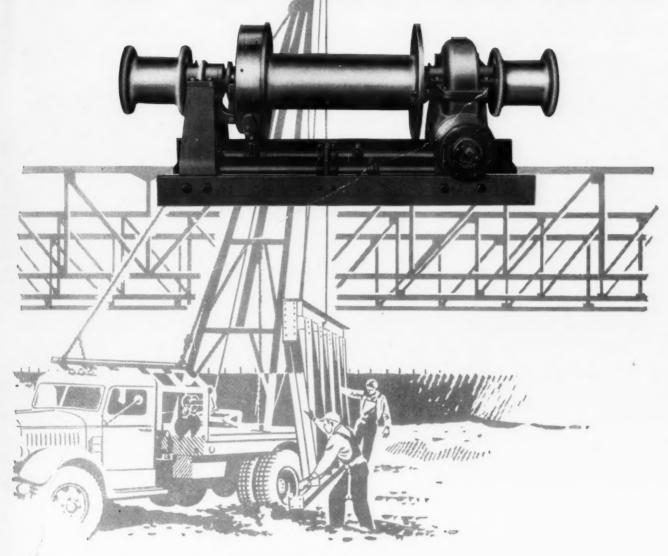
The EC-7 is but one of a complete line of Tournacranes now available to handle ALL your lifting, moving, and spotting jobs. No matter what you have to lift or move, there is a Tournacrane that can do it more quickly, more efficiently, and more economically. Write today for full particulars.

R.G. LETOURNEAU INC Journalayer Division

Department 501

Longview, Texas





The job's a cinch with TULSA WINCH, no matter how large or small. Tulsa Winches are designed for all type hauling or lifting jobs, and are available for ½-ton trucks, to the largest trucks and tractors. The Tulsa Winch is engineered to give years of trouble-free service.

You can make your truck more useful . . . more profitable. Handle loads and materials

from 500 pounds to 200,000 pounds. Hoist, pull, skid, load your truck, pull out trees, erect steel, pull box cars, load steel, etc. You can do 1001 jobs with a TULSA WINCH.

All winches are operated from the truck cab, affording the operator complete control at all times. For literature, write Tulsa Winch Division of Vickers, Inc., 815 E. First, Tulsa, Okla.

Tulsa Winch
TULSA OKLAHOMA VICKERS INC.

As Far Ahead in Ease of and Servicing as in



SIMPLIFIED SERVICING

All adjustments are unusually accessible.

All fittings or lubrication points readily reached — none under tractor. Draining transmission final drives and engine crank case are the only operations which need to be done from beneath the tractor.

Types of oils and greases needed are cut to a minimum.

ONLY 3 LUBRICATION PERIODS No daily lubrication necessary:

AT 75 HOURS-drain engine oil.

- . . . change lubricating oil filter elements.
- . . . check final drive, transmission and hydraulic steering.
- . . . only 3 grease fittings: 2 on torque converter; 1 on engine clutch release.
- AT 200 HOURS—drop oil in cups of starter and generator. 4 fittings; fan, fan belt idler and universal joints.
- AT 1,000 HOURS—change oil in transmission and final drive.
 - . . . lubricate truck wheels, track idlers and support rollers.

FASTER, EASIER SERVICING, MEANS LESS "DOWN TIME"... LESS COST... HIGHER OUTPUT. SIMPLIFIED MAINTENANCE MEANS BETTER MAINTENANCE, TOO!

m Performance!..



No need to remove unrelated parts to reach units needing attention.

REPAIRS

EASILY

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ER O! ACCOMPLISHED

Engine clutch and torque converter can be removed without disturbing engine or transmission — transmission assembly removable without disturbing engine, clutch or bevel gear.

Each steering clutch removable independently of final drive or bevel gear.

Special tools cut to minimum.

Complete stocks of replacement parts—made in same factory to same exacting specifications as are on original tractor—are carried by Allis-Chalmers dealers.

ALLIS-CHALMERS

ORIGINATOR OF THE TORQUE CONVERTER TRACTOR





GUESSTIMATE or ESTIMATE!



ARE you making "guesstimates" when it comes to figuring jobs because you can't be sure of the exact capacity of your mixers or pavers? Or are you making accurate "estimates" based on equipment whose capacity you know right down to the last yard?

There's an easy way to know in advance! Just make sure the mixer or paver you buy wears an AGC Rating Plate. It is your assurance that it will deliver its exact rated capacity. For before any equipment can wear this plate, it must accurately conform to the standards set up by the Mixer Manufacturers Bureau for your protection. You can make accurate estimates . . . not "guesstimates."

Next time you're in the market for a mixer or paver, look first for the AGC Rating Plate and be sure of capacity in advance!

MIXER MANUFACTURERS BUREAU

Affiliated with the Associated General Contractors of America, Inc.

Chain Belt Company Milwaukee, Wis.

Construction Machinery Co. Waterloo, Iowa

> Koehring Company Milwaukee, Wis.

Ransome Machinery Co. Dunellen, N. J.

Kwik-Mix Company Port Washington, Wis.

The Foote Co., Inc. Nunda, N. Y. The Jaeger Machine Co. Columbus, Ohio

The T. L. Smith Company Milwaukee, Wis.

The Knickerbocker Co. Jackson, Mich.

CLEVELAND RAILERS

FOR FAST...SAFE...DEPENDABLE EQUIPMENT AND MATERIAL HAULING

NO SPECIAL TOWING VEHICLE REQUIRED ... COMPLETE IN EVERY DETAIL

YOU HAUL QUICKLY AND SIMPLY WITH ANY TRUCK-stake, dump or tractor. EXTREME LOW LOADING HEIGHT eliminates bridge and overhead wire problems. Four-point support and minimum loading angle materially reduce tipping and slipping hazards, assuring SAFE, FAST LOADING. Even weight distribution, 4-wheel electric brakes and generous size tires make for SAFE HAULING.

NOTE THESE MOST DESIRABLE FEATURES-

- . USE OF ANY TYPE OF TRUCK FOR TOWING
- . LOW BED WITH AMPLE ROAD CLEARANCE
- . EQUAL LOAD DISTRIBUTION ON BOTH AXLES . FRONT AND REAR LOADING
- . FOUR-POINT SUPPORT WHEN LOADING
- . HEAVY DUTY FRAME WITH DEEP "H" BEAM AXLES
- TWO-INCH HARDWOOD TRANSVERSE FLOORING
- . AMPLE-SIZE ALLOY STEEL KING-PIN BOLT
- QUALITY ENGINEERING AND CONSTRUCTION

HERE'S WHAT YOU GET AS STANDARD EQUIPMENT-

- . FOUR-WHEEL ELECTRIC BRAKES . BRAKE CONTROL UNIT FOR TOWING VEHICLE
- . BREAK-AWAY SWITCH
- . LOAD RAMPS
- . TAIL AND SIDE LIGHTS
- . SAFETY CHAINS AND LOAD BINDERS
- . AMPLE-SIZE TIRES
- . FULL WOOD BED
- . LICENSE PLATE BRACKET



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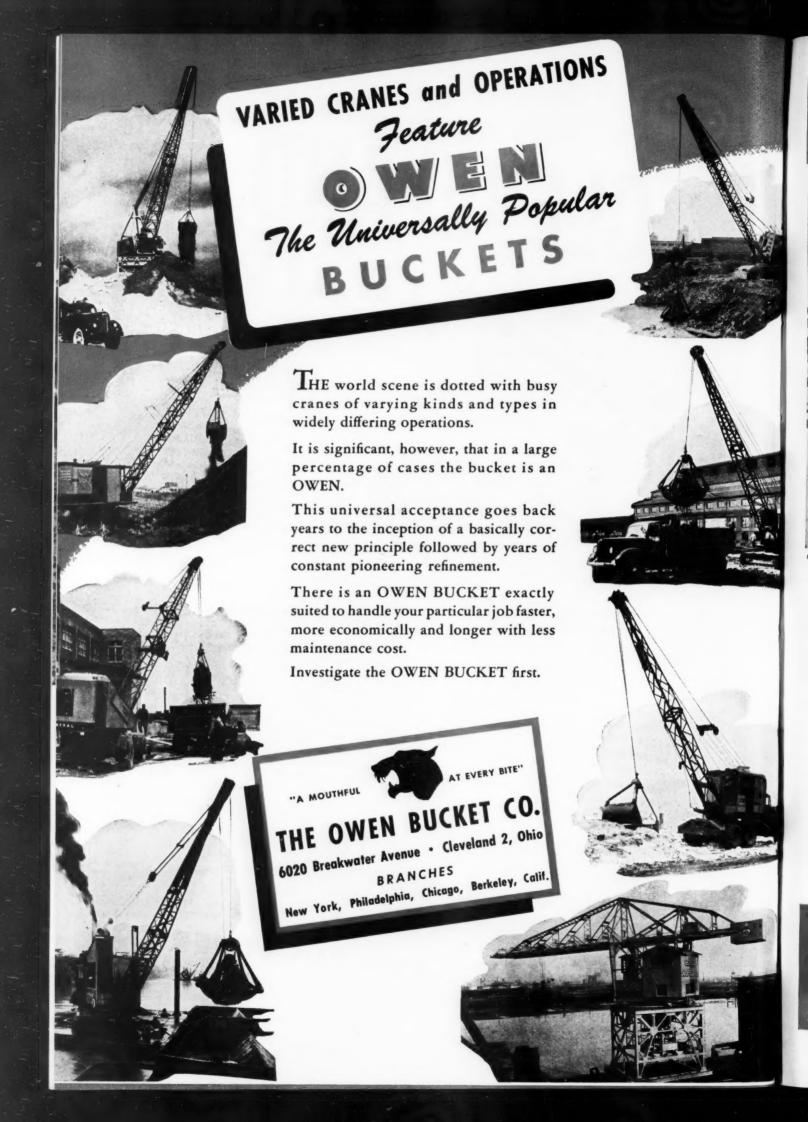
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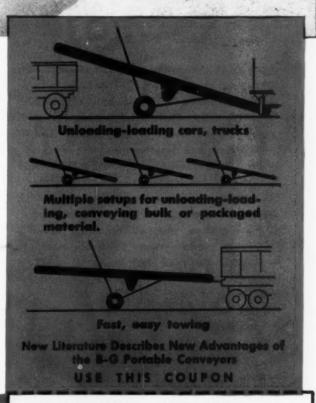
Barber-Greene



847481

Faster..Lowest Cost per Ton.. One-Man Operation

The versatility and one-man usefulness of B-G Portable Belt Conveyors offer almost unlimited possibilities for cutting the cost per ton handled - speeding up loading, unloading, stockpiling and conveying operations wherever they're put to work. These modern high-capacity conveyors handle all materials—stone, sand, gravel, coal, coke, ashes, bulk chemicals, bagged or boxed material — even wet concrete. Available in many sizes (lengths from 25' to 60'; belt widths from 18" to 30") with advanced features that include highly portable, pneumatic-tired wheel trucks, lighter, stronger frames, V-belt drives and speed reducers—no chains or sprockets—and 100% antifriction bearings. Use the coupon or see your B-G distributor for full information. Barber-Greene Company, Aurora, Illinois.



BARBER-GREENE COMPANY
AURORA, ILLINOIS

BARBER-GREENE COMPANY • AURORA, ILLINOIS

Send new literature on B-G Portable Conveyors.

Have distributor get in touch with me.

Name

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Zone

State



You can really step up the efficiency of road building operations with modern hard working Huber machinery. Huber road machinery is built to do your job . . . do it faster . . . better . . . and for less.

Huber machinery will permit you to employ real cost-saving methods. The extra reliability and added service life built into each piece of Huber equipment makes Huber machinery a foremost choice among road construction and maintenance men everywhere. Take your cue from this reputation for efficient low cost operation and at the same time realize a greater profit on your equipment investment. After a trial, and cost comparison you will see why Huber machinery produces more favorable results in all phases of road work under all conditions. Write today for descriptive bulletins and name of your nearest Huber dealer. He can help you save money.



Huber Variable Weight Tandem Rollers Sizes from 3 to 14 tons



Huber 3-wheel Rollers with speed and power to spare Sizes from 5 to 12 tons.

MFG.COMPANY . MARION, OHIO, U. S. A.

Page 28 — CONSTRUCTION METHODS — August 1948

3 Wheel . Tandem ROAD ROLLERS MAINTAINERS

New



PONY DITCHER

The 401 Pony-smallest ditcher built. Don't waste time and money, moving earth to lay small pipe. Put the rugged Pony-sized 401 to work ditching Only 6" and 8" cutting width; 4' cutting depth . . . it leads the parade of new Buckeyes coming off the assembly lines.



With the 406 General Utility Ditcher you can handle a wide range of gas, sewerage, water, telephone conduit and highway drainage, fast and economically. Gives you wide choice of speeds and feeds. Renewable easy-change rooter bits on clean-cutting buckets with 15" to 24" cutting widths, and 6' to 8' depth. You can undercut cross mains, walks and driveways. You'll like its ease of operation, its automotive controls.



The Buckeye 312 is the "last word" for your cross-The Buckeye 312 is the "last word" for your cross-country job. Ideal for long water and gas mains, sanitary district work, and pipelines. Digs a ditch 16" to 30" wide, and up to 6' deep. Diesel powered . . . hydraulic coupled transmission. Renewable easy-change rooter bits. Light, strong tubular welded steel frame. You'll recognize 55 years of leadership in the new complete line of



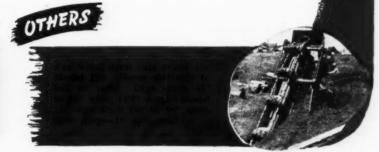
New Speedy-Change Rooter Bits Now Available for Buckeye Ditchers



IVISION, FINDLAY, OHIO

Buckeye

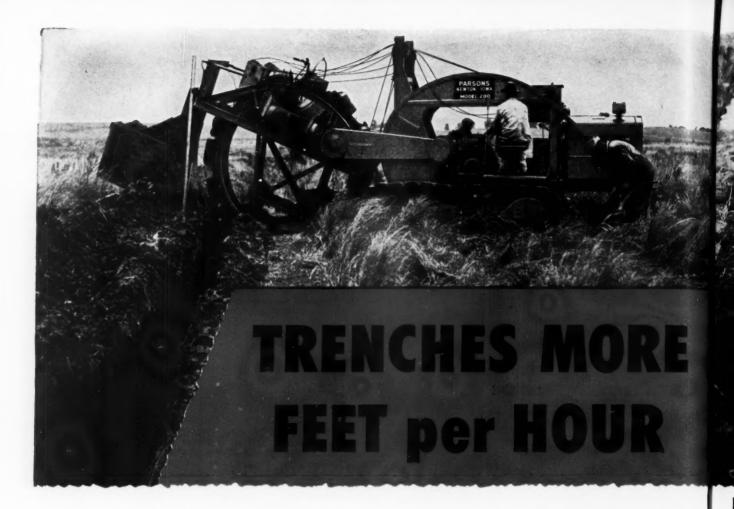
Ditchers · Shovels · Spreaders · Finegraders



GAR WOOD INDUSTRIES, INC. Findlay Division, Findlay, Ohio.

Please send me the new bulletin on:

- O PONY DITCHER O 406 DITCHER 120 DITCHER



200 wheel Trenchliner digs up to 20' per minute

Here's a high-production trencher that can dig as fast as 20' per minute on your farm, airport and highway drain-tile jobs. In oil fields, a mile of pipeline trench a day is not uncommon with this Parsons 200 wheel Trenchliner. Digs 15" to 26" wide, up to 5'-6" deep...produces clean, smooth-walled trenches that require no costly hand trimming.

Pivot-mounted wheel maintains accurate grades

Specified drainage and irrigation ditch grades are easier to maintain, because wheel responds instantly to hoist . . . it's pivot-mounted, not tied down to dirt-catching, elevating slide tracks. Dirt, mud or grit can't affect its responsiveness. Wheel

hoist alone controls digging depth. Three-point hoist cables, worm gearing in wheel hoist case, and sensitive disc clutches give you accurate grade control adjustment to fraction of an inch.

Delivers dependable, trouble-free service day after day

Heavy-duty wheel is supported at 4 points . . . is held firmly at bottom where digging pressure is greatest. Rugged arched wheel-frame rigidly supports both digging wheel and conveyor . . . keeps wheel precision-aligned for accurate grading. Main operating gears are fully enclosed . . . run in continuous oil baths . . . minimize maintenance, give you longer, trouble-free service.

Your Parsons distributor can show you many more production-boosting features about this 200 wheel Trenchliner. It's the fastest-digging of all 4 Trenchliner models built by Parsons. Get complete facts and figures from your distributor TODAY.





Lays Tile 20% Faster

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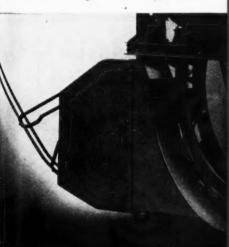
wheel

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DDAY.

Parsons tile chute, optional on the 200 Trenchliner, can increase output as much as 20%. It slides tiles to bottom of chute... eliminates much heavy tile lifting... reduces muscular effort. Efficiently installs tile even in caving ground. This labor-saver, plus Trenchliner's accurately-graded trench, means more drainage installed per shift.



PARSONS COMPANY NEWTON, IOWA 16-S DANDIE* folds batch 80 times per minute

Re-mixing drum folds batch 80 times during average 1-minute mixing cycle...thoroughly cement-coats every particle. Discharges full batch in 2½ revolutions. Side or end discharge. Can also be equipped with special, 90"-wide open end skip for loading from batch trucks . . . speeds production on many jobs. Other DANDIE sizes: 3½-S, 6-S and 11-S.

*Trademark Reg. U. S. Pat. Off.



KWIK-MIX COMPANY

Manker (3/LELiles

ROADBUILDERS' batchers adaptable to fit any bin

Johnson Roadbuilders' Batchers are completely portable . . . adaptable to fit any bin . . . provide accurate control. Single-material batcher (foreground) can be arranged for gang operation, to batch 2 materials in practically same time as 1. Multiple-aggregate batcher (background) handles 2 or 3 materials. Other Johnson sizes, types to fit every plant problem.



C. S. JOHNSON COMPANY

MUD-JACK* offers big profit opportunities

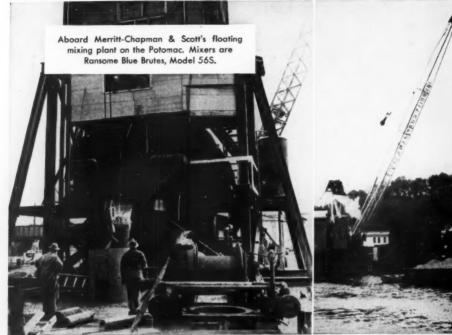
Koehring Mud-Jack offers many opportunities for very profitable contracting service. Its low-cost method of stabilizing sub-soil and raising concrete structures opens a wide field of applications around factories, on bridge and highway work, foundations, on railroad track stabilization. 3 sizes — big Model 50 illustrated. Write for catalog.

*Trademark Reg. U. S. Pat. Off.



KOEHRING COMPANY

"FLOATING BLUE BRUTES HELP BUILD NEW BRIDGE



Merritt-Chapman & Scott's "concrete fleet", showing the Blue Brute mixing plant and attendant barges.

BLUE BRUTES

Your Blue Brute Distributor will be glad to show you how Worthington-Ransome construction equipment will put your jobs on a profitable basis.

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RANSOME EQUIPMENT

Pavers, Portable and Stationary Mixers, Truck Mixers, and Accessories.

WORTHINGTON EQUIPMENT

Gasoline and Diesel Driven Portable Compressors, Rock Drills, Air Tools, Self-Priming Centrifugal Pumps and Acces-

WORTHINGTON

Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division, Holyoke, Mass.

Distributors in all principal cities

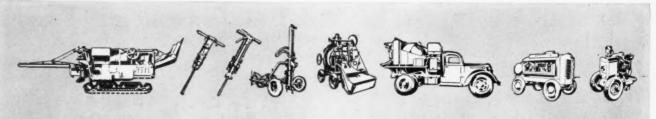
Concrete for the piers of the new Washington-Alexandria bridge over the Potomac is being mixed on a unique floating batching and mixing plant employing two Ransome Blue Brute 56S Mixers. Merritt-Chapman & Scott, Contractors, combined a mixing and batching plant with a floating crane to keep the plant near the forms. Cement, sand, and aggregate are supplied from barges hauled to the plant, and mixed concrete is hoisted by floating crane to the forms.

Each one of these Blue Brutes is equipped with the new Ransome "power pack"—a small, compact unit containing the discharge mechanism's automatic hydraulic control, allowing one-man operation with a single hand-lever.

Other Blue Brute features for low-cost, trouble-free mixing are: Drum rollers turning independently on two Timken roller bearings...Steel drum roller tracks...Roller shafts of heat-treated alloy steel...Ransome's exclusive mixing action, fast and thorough...Drum is equipped with renewable liners.

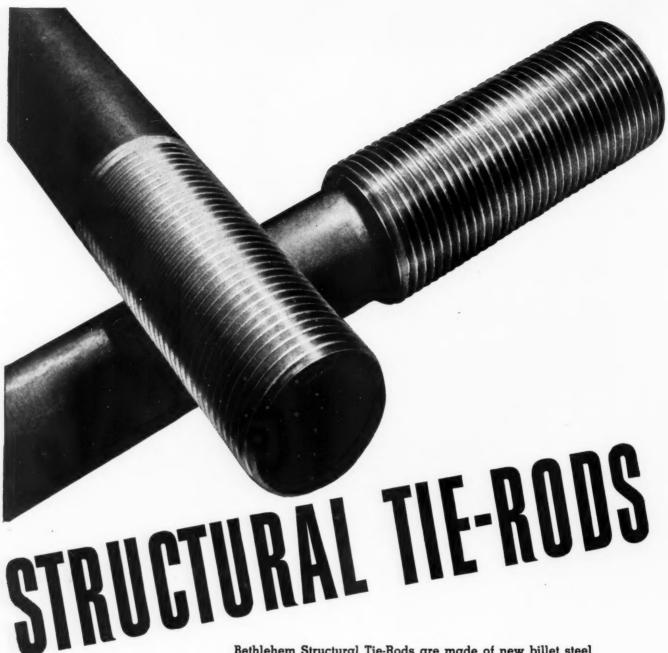
Get further facts on why Blue Brute Big Mixers are first choice of so many central mixing plants and topflight contractors. See your nearby Worthington-Ransome Distributor, or write direct.

BUY BLUE BRUTES



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB





Bethlehem Structural Tie-Rods are made of new billet steel to ASTM Specification A-7, and are furnished in all sizes up to $4\frac{1}{2}$ in. thread diameter. They come either plain or upset, in single units up to 46 ft long, and in multiple units of any length. They have either cut or rolled right- or left-hand threads, the standard thread being American Standard Coarse, Class 2 fit.

Bethlehem also makes an alternate type of rolled-thread rod in sizes up to $1\frac{1}{2}$ in. thread diameter. This rod equals or exceeds the strength of cut-thread rods of equal thread diameter, thus offering the user a saving in cost and weight.

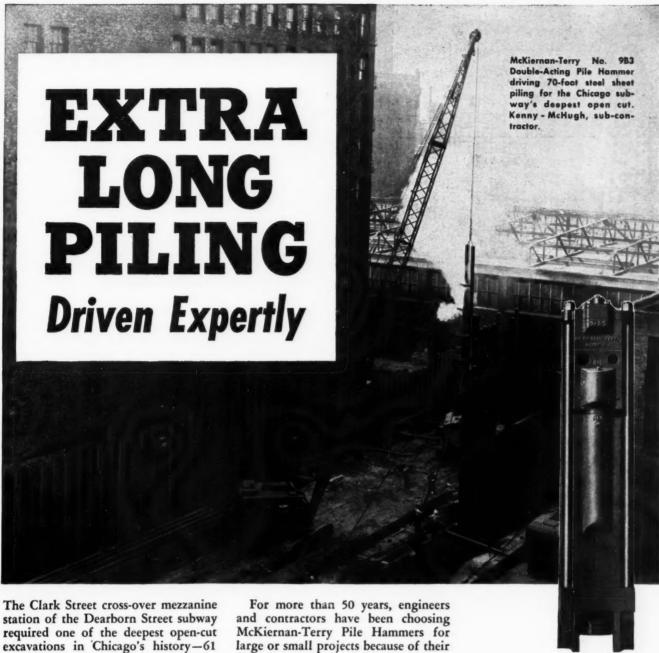


On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Export Distributor: Bethlehem Steel Export Corporation



Other Bethlehem Construction Fastenings

BOLTS and NUTS . TURNBUCKLES . CLEVISES . RIVETS . SPIKES . WASHERS



The Clark Street cross-over mezzanine station of the Dearborn Street subway required one of the deepest open-cut excavations in Chicago's history—61 feet. A huge cofferdam was necessary before excavating — built of 70-foot steel sheeting of heaviest section obtainable—the longest piles ever driven, top-to-bottom, in Chicago.

To drive this piling, the contractors selected two McKiernan-Terry Double-Acting Pile Hammers. For the first 50 feet of penetration, a 9B3, as shown in photo, delivering 8,750 foot-pound blows—an 11B3, with blows of 19,150 foot-pounds, for the final 20 feet. The straightness with which these long piles were set and driven aroused much favorable comment.

For more than 50 years, engineers and contractors have been choosing McKiernan-Terry Pile Hammers for large or small projects because of their dependability, power and safe operation. The McKiernan-Terry line offers a choice of ten standard sizes in doubleacting hammers; five single-acting hammers; two double-acting extractors—always a right hammer or extractor for any given job.

FREE DESCRIPTIVE BULLETINS

Write for McKiernan-Terry Bulletins No. 55 and No. 57 giving complete information and specifications on McKiernan-Terry Double-Acting and Single-Acting Pile Hammers. Keep these helpful guides handy for reference.

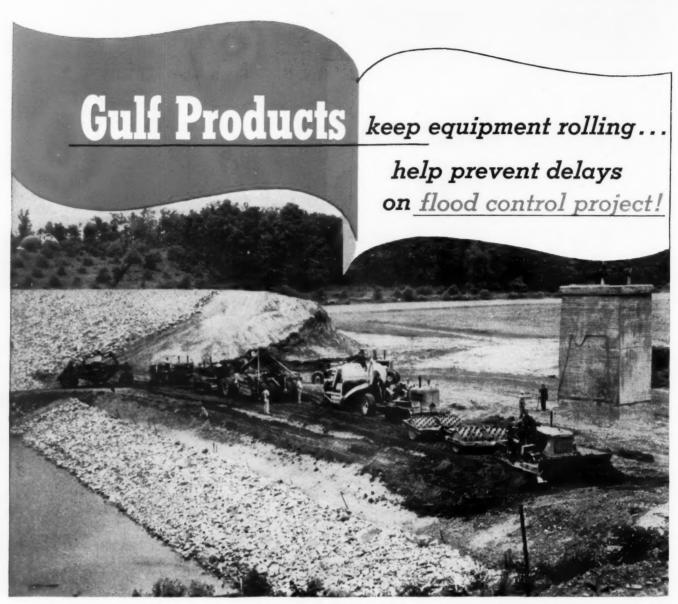


Other McKiernan-Terry Activities

McKiernan-Terry quality and engineering excellence is also found in coal and ore bridges, bulk material unloaders, marine equipment and other large engineering structures performing important service to industry, railroads and our government.

McKIERNAN-TERRY CORPORATION Manufacturing Engineers 14 Park Row, New York 7, N. Y.





John F. Casey Co., Pittsburgh, Pa., has the contract for this important flood control project at Elkins, W. Va. Two earth dams and a connecting canal are being built to divert from Elkins the flood waters of the Tygart River, the course of which takes the form of a hairpin in the city. Pictured here, in the finishing stage, is the diversion dam, upstream from Elkins. Of earth construction, it is compacted and slope faced with crushed rock.

"All-weather protection with Gulf quality lubricants and smooth power with Gulf fuels are playing a big part in our fast progress on this earth dam job," says H. G. Cranston of John F. Casey Co. "In spite of the widely varying operating conditions we have encountered, our equipment has made an outstanding efficiency record."

The rate of progress and the profit on any engineering or construction job depend to a large extent on equipment performance. That is why many leading contractors specify Gulf lubricants and fuels — they know that with these quality Gulf products they can always rely on extra hours of trouble-free service from every unit.



Gulf Oil Corporation • Gulf Refining Company

Division Sales Offices:

Boston · New York · Philadelphia · Pittsburgh · Atlanta
New Orleans · Houston · Louisville · Toledo

Tailored for the Job!

Three popular types from Thermoid's complete Air Hose Line

For heavy duty service where oil may be present in the air line, and cover abrasion is severe.

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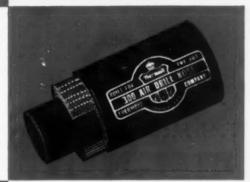
ality

ours

Thermoid # 210 Type—Special Neoprene Oil-Resisting Inner Tube reinforced with tough plies of braided yarn, abrasion resisting cover—pressures up to 300 P.S.I. furnished in lengths of approximately 500 ft. in sizes ½ to 1" and approximately 250 ft. in 1½ and 1½".



Wrapped construction for similar heavy duty service where hose is subject to rough handling. Thermoid #300 Type—Neoprene Tube reinforced with heavy, square woven duck, abrasion resisting cover—pressures up to 300 P.S.I. Sizes ½ to 3" in 50 ft. lengths.



For light duty air connections, blow-out work and similar service. Thermoid #220 Type—High quality Inner Tube compounded to resist oil, tough cover. Furnished in lengths of approximately 500 ft. in sizes ½ to 1" and approximately 250 ft. in 1½ and 1½".



Additional types of Air Hose are available for specific services

It's good business to do business with

Ihermoid

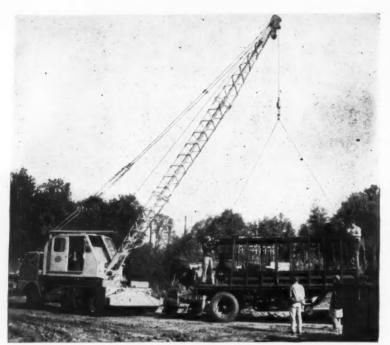
In more than 60 years of working closely with the engineers of industry, Thermoid has developed a *complete* line of Industrial Rubber Products—with the type of construction carefully worked out for every degree of service.

Thermoid distributors carry large stocks of our standard items and always work closely with the Thermoid sales engineers when their customers have special requirements to be met.

The Thermoid Line Includes: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Custom Molded Products • Industrial Brake Linings and Friction Materials.



Thermoid Company · Trenton, N. J., U. S. A. Automotive · Industrial · Oil Field · Textile Products



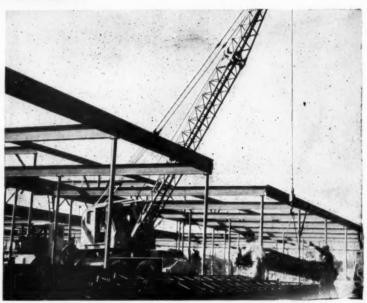
Four Jobs ...

ONE MORNING

- ♠ Erect roof trusses
- **Unload** cast-iron pipe
- Set structural steel
- Place prefab sheathing for roofing crew

F. H. McGRAW COMPANY'S MICHIGAN TRUCK CRANE

Keeps Crews Busy, Prevents Delays...



This single morning's work is typical of Michigan.

Although smallest of the cranes owned by F. H.

McGraw Company, Inc., this Michigan 12-ton

Truck Crane has worked on a wide variety of industrial construction jobs from Connecticut to

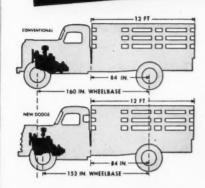
Illinois. To the complete satisfaction of its owner, it has proved an outstanding time-saver... For your jobs, too, get the mobility, speed and dependable, economical performance of Michigan Mobile Shovel-Cranes. Send for full details.

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY

495 SECOND STREET . BENTON HARBOR, MICHIGAN, U. S. A.

Only Dodge gives you all these features



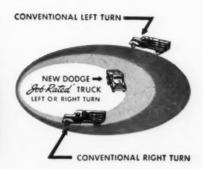
BETTER WEIGHT DISTRIBUTION

By moving the front axle back, and the engine forward, more load is carried on the front axle, giving Dodge "Job-Rated" trucks much better weight distribution, plus ability to haul more payload.



MORE COMFORT AND SAFETY

1. Plenty of headroom. 2. Steering wheel right in the driver's lap. 3. Natural, adjustable back support. 4. Proper leg support. 5. Chair-height seats. 6. 7-inch seat adjustment. 7. "Air-O-Ride" cushions, adjustable to weight of driver and road conditions.



SHORTER TURNING DIAMETERS

You can turn in much smaller circles, right and left, because Dodge "Job-Rated" trucks have an ingenious new type of "cross-steering," plus shorter wheelbases and wider tread front axles.

WITH THE TRUCK THAT'S "Sob-Rated" TO FIT YOUR JOB!

A truck that *fits your job* saves money . . . and lasts longer. It's easy to see *why*.

If your truck is too big, you waste gas and oil carrying unnecessary weight. If it's too small, breakdowns run up excessive maintenance costs.

There's no need to drive expensive "misfits." Go to your nearest Dodge dealer. Tell him what you haul, how much it weighs, and where you haul it. He will then recommend a Dodge "Job-Rated" truck specifically engineered and built . . . to fit your job.

Such a truck will have "Job-Rated" power . . . the right one of seven great truck engines.

It will have exactly the *right* clutch, transmission, rear axle... and every other unit... to haul *your* loads over *your* roads.

In all, there are 248 basic "Job-Rated" chassis and body models. They are engineered and built for gross vehicle weights up to 23,000 pounds, and for gross tractor-trailer weights up to 40,000 pounds. Each is "Job-Rated" for maximum economy, typical Dodge dependability.

And remember...
ONLY DODGE BUILDS "AN RATED" TRUCKS



DODGE "3nd-Rated" TRUCKS

FIT THE JOB...SAVE MONEY
...LAST LONGER

riding high and easy

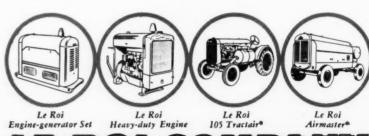
... the smooth, dependable, easy-holding power of LE ROI-CLEVELAND Sinkers reduces drilling costs by drilling more feet of hole per shift—for more shifts

Power for fast drilling in hard rock; power that rotates the steel in "fitchery" formations; power that cleans the holes and improves performance — you get all kinds of power in Le Roi-Cleveland 45-lb. H-10 and 55-lb. H-111 sinkers.

This power, besides producing more feet of hole in a shift, is easy to handle. It is smooth power that seems to flow like the air that drives these outstanding drills. "Kickback" is reduced to such an extent that both the H-10 and H-111 are easy to run, even on long steels.

And, it is dependable power. The working parts are carefully designed to provide the strongest possible sections — they are heat-treated by men who have more than 40 years of heat-treating experience behind them — and they are enclosed and protected by durable drop forgings.

Put Le Roi-Cleveland sinkers to work, and take a big slice out of your drilling costs — shift after shift. See your Le Roi distributor or write for our latest literature.



le roi company



CLEVELAND DIVISION

Manufacturers of Cleveland Rock Drills

Cleveland 11, Ohio

LE ROI COMPANY, General Offices, Milwaukee 14, Wisconsin

NEW YORK • WASHINGTON • CLEVELAND • MILWAUKEE BIRMINGHAM • TULSA • BUTTE • SAN FRANCISCO

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P&H SINGLE PASS SOIL STABILIZERS



• On this soil-bituminous state highway in Texas, a P&H Stabilizer with one operator processed on an average of 8,000 square yards per day in a single pass. Maximum production often reached 1,200 square yards per hour!

There's little that's unusual in the speed of this Texas job. Such reports are being received from all over the country — where P&H Single Pass Soil Stabilizers are at work building excellent, all-weather surfaces more quickly.

Making maximum use of in-place materials, the P&H Stabilizer performs with accurately predetermined results, all 8 basic requirements of soil stabilization — and does it with any type admixture and at a rapid pace.

If you build secondary highways, streets, base courses, airport runways, etc., you should investigate the P&H Single Pass Soil Stabilizer. Ask for information.



FACTS ABOUT THE JOB! . .

Location of Project - State highway 274, Henderson County-from Tool to Kaufman County line.

Length of Project — 7.68 miles.

Width of Roadway - 20 feet (2 lanes of 10 feet each).

Type of Soil — Loamy sand.

Stabilizing Agent — 4 gal. cracked fuel oil per sq. yd.

Rate of Production — Average 8,000 sq. yds. per working day.

NEW MOTION PICTURES!

If you would like to see a P&H Stabilizer at work processing soil-stabilized roads — learn how it does it — write us for showing of full color, sound motion pictures. One covers soilcement and the other soil-bituminous work.



Plenty of Punch

FOR THE HARD JOBS

BIG ENGINES "tailored" to fit the work range of each model in the Bucyrus-Erie %-to 2½-cu. yd. machine line produce power to meet all demands of excavator and crane service. Simple, efficient, long-lived machinery keeps this power always under the complete control of the operator, who can apply it exactly where he wants it, when he wants it, in the amount he needs.

Transmission is efficiently yet simply lubricated, and wide use of anti-friction bearings for a smooth power flow over a minimum of moving parts further reduces power losses through friction. The smooth-

BUCYRUS

ness and balance of Bucyrus-Erie power add ease of operation to capacity for long hours of sustained production. Durability of parts and reduction of wear keep maintenance costs low, too.

There are many more reasons why Bucyrus-Eries are "tops" among owners and operators alike. See your Bucyrus-Erie distributor for more information on how Bucyrus-Eries can help solve your excavating problems efficiently and economically.

BUCYRUS-ERIE CO. SOUTH MILWAUKEE, WISCONSIN

TOURNADOZER

Tournadozer's correctly curved blade rolls big quantities of coal...loads average three cubic yards per trip.



Contractor Sam Falbo. of

Lorain, Ohio, is using a high-speed, rubber-tired C Tournadozer, operating 24 hours a day 7 days a week, to position and compact coal on stockpile for big Ohio industrial firm. Actual job production studies show Tournadozer averages 116.4 cubic yards per hour on 300' cycles . . . that's 1 minute and 29 seconds per cycle. Especially valuable is Tournadozer's ability to go anywhere on the property or travel job-to-job at speeds up to 15 m.p.h.

Rubber tires reduce fire hazard

In addition, Tournadozer's giant rubber tires leave a hard-packed surface behind them . . . give good coal compaction to reduce the possibility of spontaneous combustion . . . do not kick up the surface of the coal.

Doubles crawler output

Operator Melvin Stevens says, "I always doze coal in 2nd or 3rd gear... make 3 trips to a tractor's one and get more coal in one load than a crawler can get in two.

"Crossing ridges of coal on a track-type dozer you can hardly stay on the seat. I go over them with Tournadozer and there is hardly any jar . . . it's faster and easier to operate. Another thing, you don't have to pull your guts out to steer it. I sure wouldn't trade it for any crawler.

"Last winter we used Tournadozer to haul tractors into the plant on a low-boy when trucks couldn't make it through ice and snow. I take our Tournadozer back to our warehouse every evening, over concrete highway."



It's RUBBER THAT PUTS THE <u>ACTION</u>
IN <u>TRACTION</u> . . . See your LeTourneau
Distributor NOW for complete information

stockpiles 116 cubic yards an hour for Ohio steel mill



Crosses pavement, tracks, rails

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3 trips

in one

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Owner Sam Falbo says, "Because of its speed, Tournadozer produces more than a crawler... does a good job . . . crosses anything: tracks, pavements, rails, etc., without damage . . . they even use it to switch railroad cars."

All-around utility dozer

On average dozing jobs, Tournadozer is going to give you more than double the production of crawler-dozers. Constant-mesh Tournamatic transmission gives you speeds up to 15 m.p.h. forward and REVERSE. Instantaneous speed selection turns shifting time into production time. Tournadozer can travel 100' in 3rd gear, forward or reverse, at speed of 7 m.p.h. in the 10 seconds it takes a crawler to shift gears.

Tournadozer-Tournamatic-Trademark CH-7

Dozing in second and third gears, Tourr completes three 300' cycles to crawler's one.

Giant rubber tires roll easily over surface . . . compact coal reduce possibility of spontaneous combustion.

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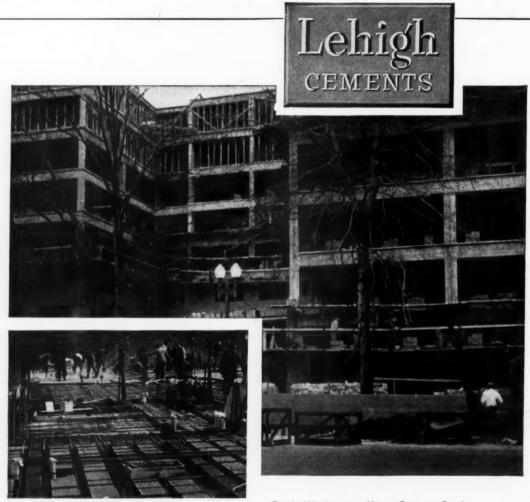
ation TOURNEAL TOURNADOZERS

FOUR Lehigh Cements on one job

- 1. LEHIGH PORTLAND CEMENT FOR THE FOUNDATIONS
- 2. LEHIGH AIR-ENTRAINING CEMENT FOR THE MANUFACTURE OF CONCRETE MASONRY UNITS
- 3. LEHIGH MORTAR CEMENT FOR ALL MASONRY WORK
- 4. LEHIGH EARLY STRENGTH CEMENT FOR THE STRUCTURAL FRAME AND FLOORS

Each of these Lehigh Cements served a definite need on this apartment hotel project in Washington, D. C. Particularly advantageous, was the use of Lehigh Early Strength Cement. The construction period was reduced by five weeks. Forms were stripped in 24 hours in spite of one of the worst winters in years, and curing time was reduced 50% . . . what's more, only two sets of forms were needed instead of three.

Lehigh supplies many types of cement for many different kinds of jobs all over the country. Consult the Lehigh Service Department on your specific building problems.



Owner: Windsor Hotel Corporation, Connecticut Ave. & Kalorama Rd., Washington, D. C. General Contractor: Muhleman & Kayhoe, Inc.,

Concrete Contractor: Kirk Lindsey, Arlington, Virginia

Ready Mix Concrete: Howat Concrete Co., Inc., Washington, D. C.

Lehigh Mortar Cement: National Brick and Supply Co., Washington, D. C

Concrete Masonry Units manufactured by National Brick and Supply Co., Washington, D. C.



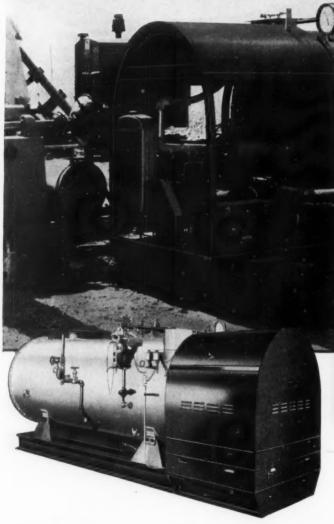
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ASH.

Steam

WHERE AND WHEN YOU NEED IT



NEW · PORTABLE · PACKAGED

CLEAVER-BROOKS STEAM GENERATORS

EXPRESSLY DESIGNED FOR CONSTRUCTION OPERATIONS

80 H.P. - 125 H.P. - 150 P.S.I.

- Fast Steaming
- 80% Efficiency
- Low Cost Operation
- · Light-Weight
- Skid Mounting for Truck or Trailer
- Low Fire Start
- Modulating Control of fuel oil — assures constant steam pressure
- Electric Ignition
- Burn any Fuel Oil up to No. 3
- Self-Contained Fuel Tanks
- Full Weather Protection
- Factory Finished and Tested
- Choice of Gas or Electric Motor

Here's what you have been looking for — completely packaged units — portable — and suitable for a wide range of construction work such as — asphalt plant, storage and tank car heating, aggregate heating, ready or hot mix plants, pile driving, and winter concrete work for both hot water and steam for curing.

Available in 80 HP and 125 HP—150 PSI. (For permanent installation a capacity range of 15 to 500 HP is available in other Cleaver-Brooks packaged steam generators.) Clean, smokeless and require no ash disposal. Provide the easiest fuel handling. Complete safety protection—a fourpass boiler designed in accordance with A.S.M.E. code; inspected and approved by Hartford Steam Boiler Inspection and Insurance Company.

Send today for illustrated catalog on the new Cleaver-Brooks Model LFM Steam Generators.

CLEAVER-BROOKS COMPANY, 387 E. Keefe Ave., Milwaukee 12, Wis.

Cleaver-Brooks

PACKAGED GENERATOR
TANK CAR HEATERS • BITUMINOUS BOOSTERS

Gasy Flow for EASY PUMPING





DEPENDABILITY PLUS

A Rex "Easy Flow" Pump is dependability itself...not for just one season but for many a year of tough service. Note the rugged press-formed pump body with its glass-smooth steel interior surface. This frictionless surface permits the smoothest flow of water through the pump...increases pump efficiency. There are no rough, pitted surfaces to encourage corrosion and early wear. No priming delays with this design. And note the straight line suction intake. Water takes a slightly downhill flow right to the eye of the impeller with least possible friction loss.



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SUSTAINED EFFICIENCY

Rex "Easy Flow" has a replaceable liner plate and a lifetime seal. But, here's the real secret behind the ability of the Rex "Easy Flow" to give you new pump efficiency for the lifetime of the pump. The exclusive adjustable air peeler is easily adjusted to restore original clearance with the impeller to compensate for wear... assuring the ability in an old pump to give you original priming efficiency at maximum suction lifts.



LIGHT WEIGHT

With its press-formed body and volute, the Rex "Easy Flow" is approximately 30% lighter than cast styles. It's easy to handle... easy to spot. Yet this pump is the most durable in the field... proved in actual applications. Engine is located over the wheels so you lift only the weight of the pump when wheeling from spot to spot.

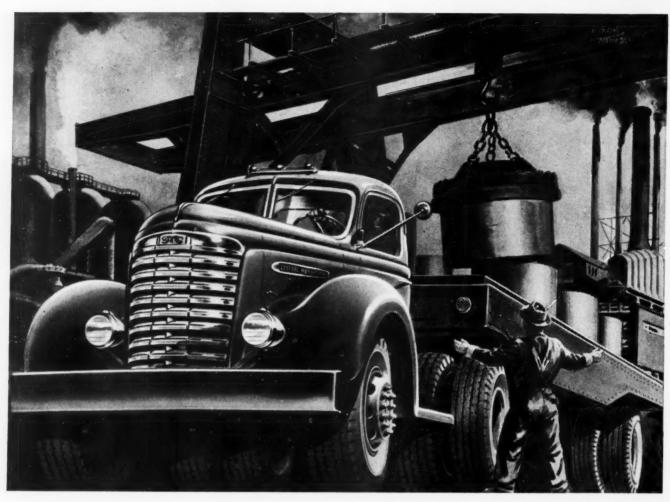
For all the facts, see your Rex Distributor or write for your copy of Bulletin No. 47-12. Chain Belt Company. 1664 West Bruce Street, Milwaukee 4, Wis.

CHAIN BELT

REX

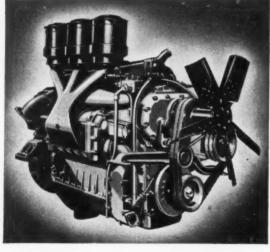
COMPANY

CONSTRUCTION MACHINERY



BUILT TO TAKE IT" . GASOLINE OR DIESEL

Illustration is drawn from actual photograph showing "850" series GMC hauling 40 tons of rolled steel between plants of a large steel mill.



GMC heavy duty engines are available in six sizes. 308, 361, 426 and 477 cubic inch gasoline engines of famous GMC "Army Workhorse" design . . . four- and six-cylinder GM 2-cycle Diesels of 133 and 200 horsepower respectively. Illustrated is the "6-71" Diesel. GMC heavy duty trucks are built in weight ratings that go up as high as 90,000 pounds for truck, trailer and load. That's a lot of weight, and it calls for big powerful engines . . . heavy, husky axles . . . and deep, thick frames, plus rugged strength and sturdiness in every other structural part.

GMCs are designed and engineered by men who are expertly versed in heavy hauling applications, gasoline and Diesel. They are produced in factories devoted exclusively to the production of commercial vehicles.

That's why GMC heavy duty trucks are the choice of so many of the nation's most experienced and successful heavy haulers. Make them first choice for your job, too . . . from the many gasoline and Diesel models now available for quick delivery.

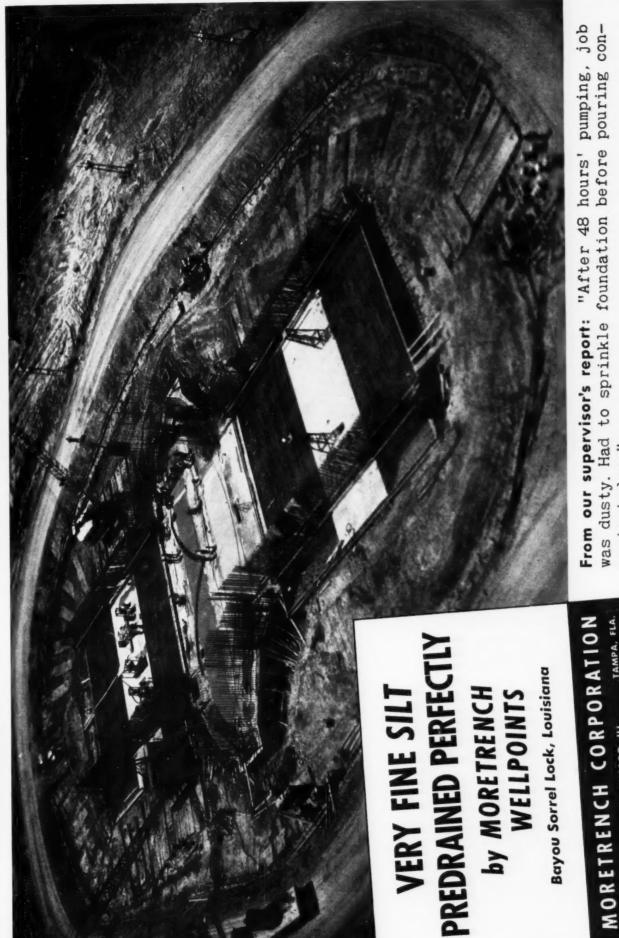
GMC TRUCK & COACH DIVISION . GENERAL MOTORS CORPORATION



Tune in Henry J. Taylor, "Your Land and Mine," Mutual Network, Monday and Friday.

THE TRUCK OF VALUE

GASOLINE . DIESEL



go up

xpertly . They duction

DRATION

was dusty. Had to sprinkle foundation before pouring concrete today." From our supervisor's report: "After 48 hours' pumping, job

If you have a pumping problem and want to save time and money, contact MORETRENCH!

ROCKAWAY, N. J.

HOUSTON, TEXAS

CHICAGO, ILL.

Users write

Recent surveys show that an overwhelming majority of owners and operators of earthmoving tractors and equipment prefer "Caterpillar" products. The lists of "Caterpillar" users, and what they say, would fill a book. Here are a couple of "pages."

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS





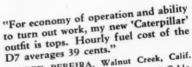


"We took our new 'Caterpillar' 'dozer on 30-day trial, and now you couldn't on 20-day trial, and now you couldn't take it away from us. It's easily tilted and really rolls the dirt. We produce approximately 11/2 million board feet a month during the summer."

HARRY WIER, Superintendent, Arcata Redwood Company, Arcata, California.

logs from the bottom of a drained pond. Working in 3 feet of mud, we get 65 to 70 thousand board feet daily. get 03 to 70 thousand board feet daily. I've been driving tractors for 14 years and know that a 'Caterpillar' Diesel will put out more board feet and really hang together."

DONALD E. SNYDER, operator for Snyder & York, Nevada City, California.



ALFRED PEREIRA, Walnut Creek, Calif. Note—Outfit also includes a No. 70 Cable-controlled Scraper. Unit carries an average load of 11 loose yards; makes 18 to 20 trips per hour on 500-ft. haul.

"We use several pieces of 'Caterpillar' equipment for material handling. One of the Diesel engines (a D8800) which powers the Dominion Hoist has operated almost 16,000 hours without repairs."

J. LUCIEN COMTOIS, Master Mechanic, Dominion Coal Co., Montreal, Quebec, Can.

"This new 'Caterpillar' D8 Tractor really paid off for us when the chips were down. Operated 24 hours per day for 6 weeks with engine shut off only long enough for oil changes. We've had excellent service from our other 'Caterpillar' track-type Tractors, too."

"JACK" VIRGIL ANDREWS, Supt., Coit Ranch, Inc., Firebaugh, California.

"I operate my 'Caterpillar' Tractor 6 to 18 hours a day. It will chisel an acre or disc five acres per hour at a fuel cost of 27 cents."

CLARENCE DANIELSON, Woodland, California.

Note-Mr. Danielson's tractor is the first "Caterpillar" Diesel purchased for farm purposes. He acquired it after it had served its former owner 15 years, or 27,000 hours.





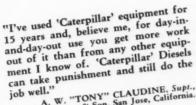


e a book



"Whether I buy equipment for use on my farm or in my capacity as County Commissioner, I always insist on

Aterpular . HARRY S. WADE, County Commissioner, Lostine, Oregon. Caterpillar'."



A. W. "TONY" CLAUDINE, Supt., A. J. Peters & Son, San Jose, California.



"I've used 'Caterpillars' since 1918 and I've used Caterpinars since 1910 and I'd certainly recommend them to anybody. I believe 'Caterpillar' track-type Tractors are built more rugged and have more stamina to stay on the job day and night. They're almost fool-proof despite the variety of operators." M. F. LEMEN, Woodland, California.



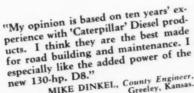
"I own three 'Caterpillar' track-type Tractors and have a new D6 on order. From my experience I know that 'Caterpillar' Diesels will stand up well in tough, muddy work."

WAYNE A. SMITH, Chico, California.



"There's no slip or slide with our new 'Caterpillar' No. 80 Cable-controlled Scraper. It's easy on cable, loads bet ter than any I ever saw, dumps easily, and will travel sand slopes without and will travel sand slopes without sliding over. We use it for leveling, grading and industrial excavation."

LOUIS H. ROBERTS, Superintendent, Macal Improvement Co., Antioch, Calif.



MIKE DINKEL, County Engineer, Greeley, Kansas.



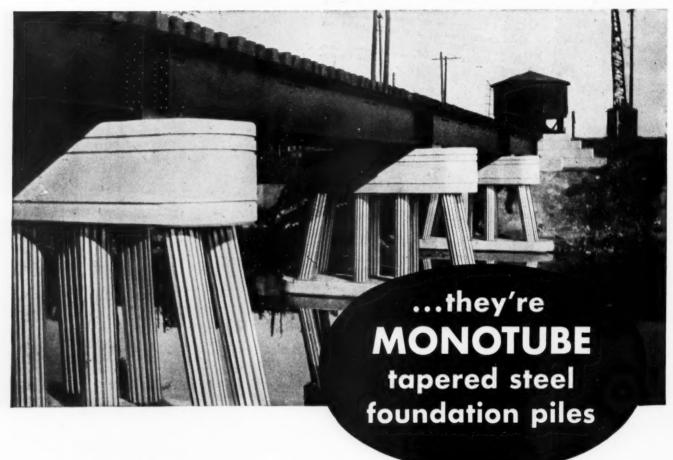




CATERPILLAR

DIESEL ENGINES . TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

100-car freights never bother this bridge's "legs"



PICTURED above is one of many sturdy bridges built on Monotube foundations. Structurally strong and durable, it will serve well for years. Heavily-loaded freights will never strain or "bother" the Monotube tapered steel foundation piles.

Monotubes are chosen time and again for roundations. They're preferred by experienced engineers and builders because . . .

Monotubes are light in weight, easily and quickly handled • They are cold-rolled and fluted for extra strength • They are easily extendible, right on the job • Their sturdy construction

makes it possible to eliminate use of a driving mandrel • Monotubes' tubular construction makes inspection, before concreting, quick and easy.

Right now you may be planning bridges, buildings, piers, airports, highways. Wherever foundation piling is necessary, plan on Monotubes. They give your projects the right start and a healthy future—make time and cost savings for you. Gauges, sizes and tapers to meet varying soil conditions. For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

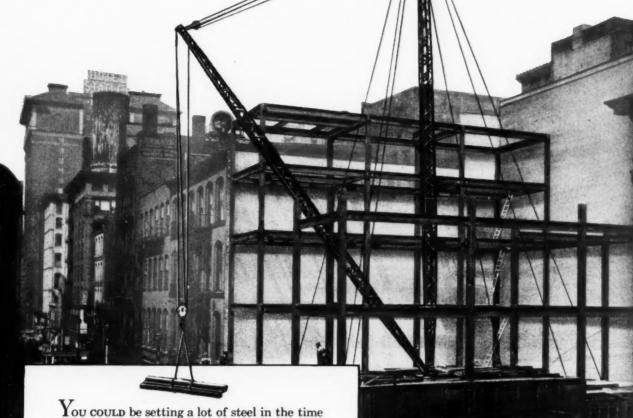
UNION METAL

Monotube Foundation Piles

We regret the present extended delivery schedules due to the steel shortage, but you will find Monotube Piles well worth waiting for.

Less rigging time with

American Derricks



You could be setting a lot of steel in the time you spend waiting for a derrick boom to be assembled . . . or for a sheave to be changed at the boom point . . . or for jumping the derrick from one floor to another.

And that's mighty expensive time, isn't it? So you'll like what AMERICAN HOIST has done to cut those non-productive hours. In AMERICAN Derricks, the engineering experience of two generations assures smoother, faster work.

AMERICAN HOIST makes everything in derricks: steel erectors, guy, stiffleg, barge, gallows frame and all special types. Mail the coupon for catalog.

merican Hoist and DERRICK COMPANY

St. Paul 1, Minnesota

elivery you will ing for.

Plant No. 2: So. Kearny, N. J. Sales Offices: NEW YORK PITTSBURGH . CHICAGO . NEW ORLEANS . SAN FRANCISCO

- Boom splices are made by turned bolts in reamed holes . . . no riveting necessary.
- Guy cap is designed for easiest, safest attachment of guy lines.
- Entire mast bottom, including sills, moves as a unit when the derrick is jumped.

EASY MAINTENANCE: To remove boom point sheave, you simply pull one pin ... no need to disturb block connections.

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AMERICAN HOIST AND DERRICK COMPAN St. Paul 1, Minneson	
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Please send catalog on AMERICAN Derricks. We are particularly interested in

HOISTS • DERRICKS • HANDIWINCH • BLOCKS & SHEAVES • CROSBY CLIPS



Our Wire Rope Experts will help you select the right rope — save you trouble and money!

• If you use wire rope, our free onthe-job engineering service will show you how to get the most out of it. We will send an engineer to help you select the rope best suited to your needs... and to help you solve any wire rope problems that might arise.

This free engineering service is but one of the many reasons why the BIG Demand is for TIGER BRAND!

Made to close tolerances and unvarying quality standards by the world's largest manufacturer of wire rope, U·S·S American TIGER BRAND Excellay Preformed Wire Rope is as fine as any rope money can buy. Pos-

sessing strength, toughness, and flexibility in the right combination, it will stand up tirelessly under long, hard service . . . to help you do a more efficient job all the way through.

Immediate Delivery!

Your supplier can furnish any amount of TIGER BRAND in either non-preformed or our famous Excellay Preformed.

AMERICAN STEEL & WIRE COMPANY
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK





AMERICAN TIGER BRAND WIRE ROPE

UNITED STATES STEEL





Because scale is extremely detrimental to good wire drawing, every coil of rod that enters Wickwire's Rope Mill is thoroughly cleaned in a carefully prepared bath -with temperature thermostatically controlled and with acidity checked and recorded at frequent, regular intervals. Then the rods are sprayed with a high pressure hose to remove all traces of acid and scale, dipped in "bath salts," lime-coated, baked, and sent to be drawn into wire.

Thorough cleaning is only one small step in the quality control of Wickwire Rope manufacture-but we at Wickwire believe that every step is important to assure finished rope that will stand rugged service-in oil fields, logging and construction camps, shipyards, mines, mills and skyscrapers. Wickwire distributors and rope engineers in key cities everywhere are ready to help solve your wire rope problems and to supply the type of rope that best meets your requirements.

For the utmost in performance, safety and long life, specify Wickwire Rope. Available for prompt delivery in all sizes and constructions, both regular lay and WISSCOLAY Preformed.

THIS 82-PAGE BOOK ON WIRE ROPE IS FREE WRITE FOR YOUR COPY TODAY!



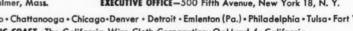
Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write - Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.



WIRE ROPE SALES OFFICE AND PLANT-Palmer, Mass.

EXECUTIVE OFFICE-500 Fifth Avenue, New York 18, N. Y.

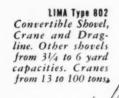
SALES OFFICES—Abilene (Tex.) - Boston - Buffaio - Chattanooga - Chicago - Denver - Detroit - Emlenton (Pa.) - Philadelphia - Tulsa - Fort Worth - Houston - New York PACIFIC COAST-The California Wire Cloth Corporation, Oakland 6, California



Built-in STAMINA cuts

"DOWN-TIME"

LIMA Shovels, Cranes and Draglines



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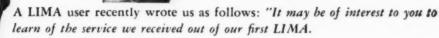
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"We used this machine on a double-shift basis for over a year and have not had any delay whatsoever other than a negligible delay caused by a loose fan belt.

"I have been using power shovels of various makes for years and personally feel this beats the record of any other shovel I ever used. I am highly pleased with your LIMA units." (Name on request. This customer now owns 8 LIMA machines and has one on order.)

An examination of the main machinery of any LIMA unit shows why such records are possible. In this clean-cut design, the fewest number of shafts are required to transmit power from engine to dipper. Important bearings including those in the drum are of the anti-friction type. Large drums (approximately 30 times the diameter of the cable) increase output with minimum cable wear. Permanently aligned shafts prevent chattering and grabbing of clutches. These are only a few of the reasons why we say:

LIMA Equipment STAYS ON THE JOB!

Lima Shovel and Crane Division

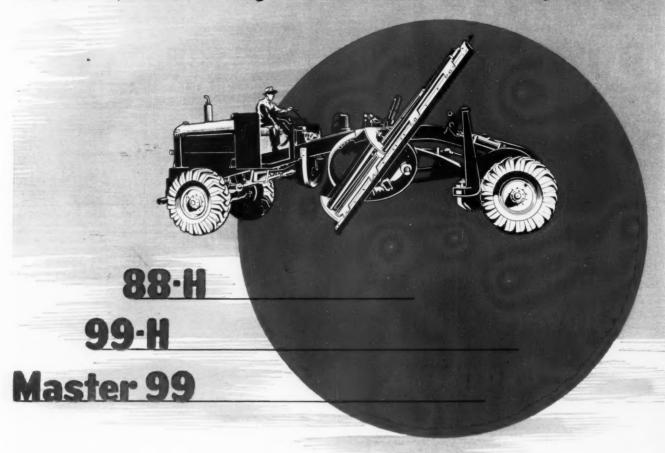
LIMA, OHIO

OTHER DIVISIONS: Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.

LIMA HAMILTON CORPORATION

August 1948 — CONSTRUCTION METHODS — Page 59

All-Wheel Drive and Steer · High-Lift Blade · Extreme Reach · Full Hydraulic Control



there is No Substitute

For All-Wheel Drive and All-Wheel Steer

in a motor grader... no way in which any rear drive, front steer machine can equal the maneuverability, power-at-the-blade, and all-around performance of an Austin-Western "88" or "99".

With All-Wheel Drive, there are no idling front wheels—no dead front end to consume power and decrease operating efficiency. All weight is on driving wheels—front and rear—contributing 100% to traction and utilizing the full power of the engine.

All-Wheel Steer provides unequalled maneuverability; saves time on every job; makes it possible to work in places where ordinary motor graders cannot go—do things they cannot do.

Get the complete story of the many additional features of these outstanding graders from your A-W distributor, or send for the latest bulletins.

AUSTIN-WESTERN COMPANY, AURORA, ILL., U.S.A.





ENGINE DRIVEN WELDER

neuver-

possible

graders

ditional

ur A-W

, U.S.A.

... portable or skid-mounted

For construction and erection work, the new Flexarc Ranger is the answer for getting there fast . . . for getting welding jobs done better, faster and cheaper. It's a smaller, lighter, sturdy engine-driven welder

for "shop quality" welds on field jobs where electric power isn't handy or available.

Easily towed at high speed, maneuverable over rougher terrain, it can be put to work in places formerly inaccessible with larger, heavier equipment.

Big welder performance at lower operating cost is provided over the same range of welding current as on similar ratings of heavy-duty industrial welders. Powered by a 4-cylinder Hercules industrial engine, it has a rating of 200 amps, 30 volts, 50% duty cycle, with a welding current range of 20 to 250 amperes.

Running gear is 2-wheel, spring-mounted, pneumatic-tired, standard road gauge. Unit is also available without running gear for stationary mounting.

For information on the Ranger and other Flexarc Welders, call your nearby Westinghouse office or write Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pennsylvania.

Westinghouse Heavy-duty Engine-driven Welders...

These welders are built for hard, continuous service wherever electric power is not available. Single, preset current adjustment gives the exact welding current desired without drop-off. Available in 200, 300 and 400-ampere ratings, gasoline powered . . . supplied with either bed-plate or wheels.





Westinghouse
PLANTS IN 25 CITIES OFFICES EVERYWHERE

FIECTBONES

WELDERS AND ELECTRODES



FREE!! New Amsco Welding Products Bulletin 1047-W

Gives complete characteristics and specifications for each welding rod or electrode. Over 90 drawings and on-the-job photographs show ingenious shortcuts. Handy alphabetical index gives, for each major field, the exact rod for almost every specific application. (Available soon: Bulletin on Amsco Tungsten Carbide welding rods, electrodes, inserts and bulk metal.) Every equipment and machine part consigned to the scrap pile leaves its "red ink" mark in your ledger: the cost of replacement, the paralyzing of equipment while waiting for hard-to-get parts, the slow down of the job you're handling. This new welding products bulletin shows how to keep equipment producing by keeping parts out of the scrap pile with Amsco Conservation Welding.

All Amsco welding products are developed solely for the reclamation, rebuilding, repairing, and hardfacing of equipment parts subject to wear. For a fraction of replacement costs, damaged or worn parts can be restored quickly to full usefulness; or new parts can be protected before use to multiply their ordinary service life many times.

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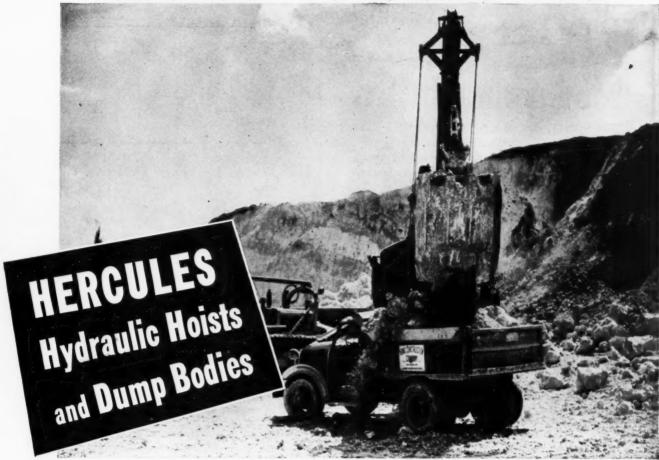
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Sturdy, all-around unit built for heavy-duty service. Pyramid type enclosed steel side braces; full length running boards; sturdy underbody construction, with cross-members and longitudinals welded into an integral unit. Capacities to meet individual job re-





















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You know the name, "QUICK-WAY", by far the oldest in the production of truck mounted power shovels. All over the world truck shovels and truck cranes are quite commonly known as "QUICK-WAYS" regardless of who made them, because "QUICK-WAYS" set the standard.



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Model E 4 10 cu yd cap, mounts on standard. 5-ton truck.

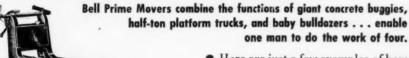
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For speed, portability, economy of operation, and adaptability to a wider range of jobs, nothing of comparable size equals a "Quick-Way" Truck Shovel.

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 Here are just a few examples of how Bell Prime Movers pay for themselves in an amazingly short time. If other companies can make these savings, so can your company...

Milwaukee. A building contractor is saving at least \$36 daily by pouring concrete with only one Prime Mover. Another uses Prime Movers to haul broken concrete and asphalt . . . two men with Prime Movers do the work of four men with concrete buggies.

New York City. This contractor is moving stone up four ramps to a height

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Buffalo. On this job, six Prime Movers are being used to pour concrete on a multi-story project. While two are loading, two are riding the hoist, and two are pouring. Three mandays are saved each day by each machine. The Prime Mover also takes as much bagged cement in one trip as 10 men can carry by hand.

Write for additional case historie and facts . . . as well as the names nearby distributors who sell apvice the Bell Prime Mover.

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- 50-inch scraper blade

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- 9-square-foot platform body
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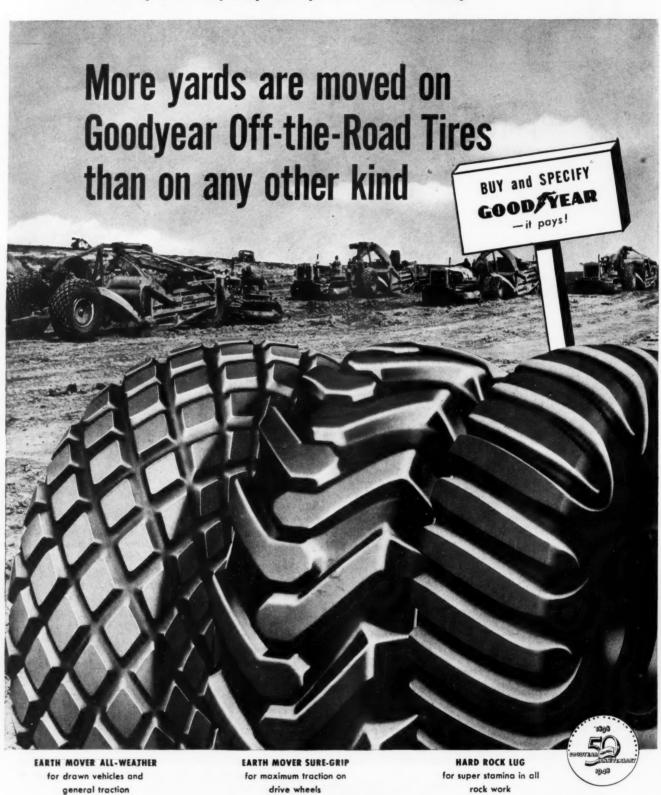


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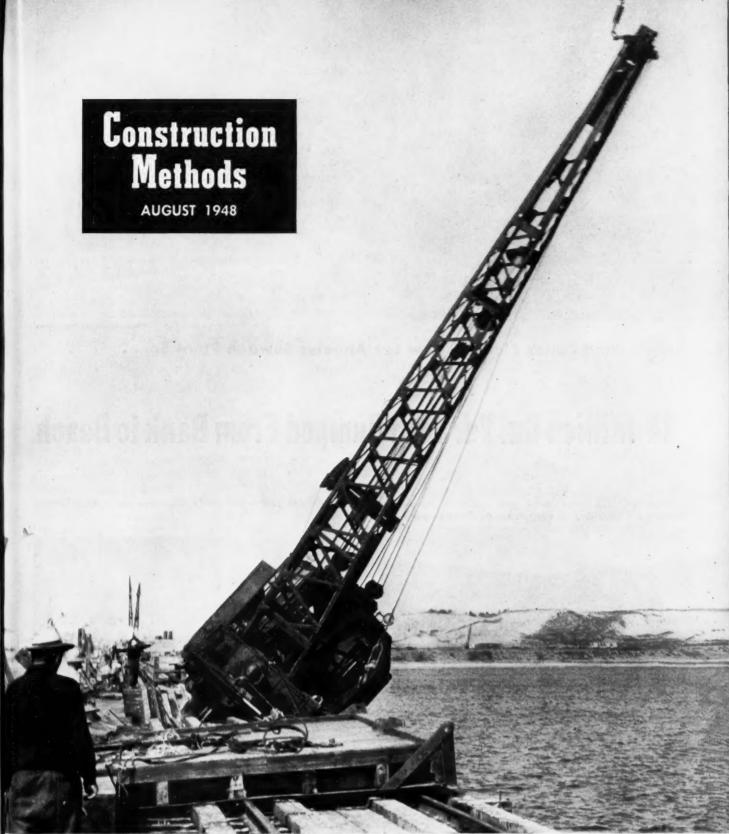
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specially designed and engineered to do more work at lower cost—
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GOODEYEAR



Los Angeles Times Photo by Oliver

High Diving Crane

TIRED OF ITS PROSAIC JOB of lifting and shifting on Guy F. Atkinson's Hyperion outfall sewer project at Los Angeles, this 80-ton locomotive crane takes a dive into a refreshing saltwater bath as a section of construction pier gives way. Trestle

sagged 5 ft. at first under crane's weight, but after futile 9-hr. rescue attempt by contractor's crew, rig decided to give up its earthly career and explore the briny deep. Photographer caught this remarkable shot at start of final plunge.



Photo Los Angeles Daily News

High Sand Dunes Blocked New Los Angeles Sewage Plant So. . .

14 Million Cu. Yd. Sand Pumped From Bank to Beach

MONITOR JETS (below) break down sand dunes and wash material to collection pool in foreground. Collection box, marked by pipe frame and containing jet eductor, sets in discharge pipeline.



HIGH SAND DUNES, some towering 175 ft. above the beach, occupied the site of the new Hyperion activated sludge sewage treatment plant Los Angeles is building on the coast near El Segundo. As the beach extending 6 mi. north of the plant to Venice was narrow and badly eroded, Los Angeles Public Works engineers specified that the 14,000,000 yd. of sand to be excavated from the plant site be used to build up a new beach. Most contractors figured the job as conventional dry haul, but the successful joint bidders, Peter Kiewit Sons Co., Omaha, and Construction Aggregates Corp., Chicago, decided to sluice down the dunes and move the sand to the beach by pumping. The result is one of the top construction tricks of the year.

Briefly, the process is to sluice down the dunes with high-pressure monitor jets, washing the dislodged sand into a collection box. Within the box is a Venturi meter type of injector, or eductor as it is called on the job, a high-pressure jet that keeps the collector clear of the sand-water mix and starts the flow through the discharge pipe. The discharge pipe ends in a big sump, where more water is added to thin down the mix for pumping out to the beach.

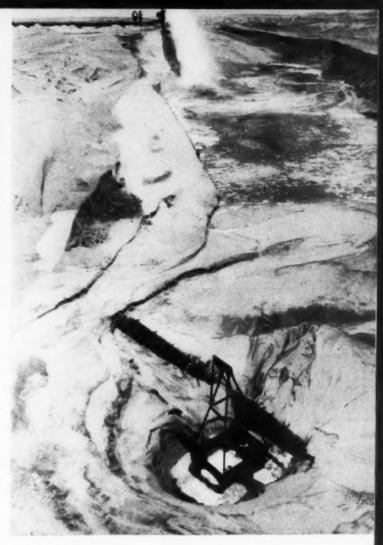
Pumping Plant Operations

Heart of the operations is the pumping plant, located in front of the dunes near the shore. A 36-in. intake pipe delivers ocean water to two big pumps, set in tandem, each powered by a 2,500-hp. G-E electric motor salvaged from the Ft. Peck Dam dredges. The first pump is a 28-in. Ft. Peck unit, the booster is a Meckum. These pumps furnish 50,000 gpm. salt water for the monitors, the return discharge lines and the discharge mixing box. Also in the pump house are two 28-in. Meckum pumps, also powered by 2,500hp. Ft. Peck motors, hooked in tandem for pumping sand to the beach. Two more big pumps ride the beach discharge line 11,000 ft. from the plant as boosters. Maximum length of beach line will be 30,000 ft. Pump impellers are changed every two weeks, and worn units are built up with cast iron welding rods. About 30,000 cu. yd. of sand is pumped every day for 6 days per week to meet the operating schedule of 750,000 cu. yd. per month. Solids in the beach line run from 10 to 25 percent, averaging 17 percent. The job is shut down Sundays for repairs and pipeline changes.

Three sets of pipelines are required for the pit area—one for the monitors, one for the eductor supply and one for the sand discharge. The last two are usually laid parallel and close together. Both welded plate and spiral weld pipe are used for these lines, from 20 to 28 in. dia. All monitors are Joshua-Hendy Iron Works swivel mounted, with nozzles from 3 to 5 in. dia., carrying 120-lb. pressure at the jet.

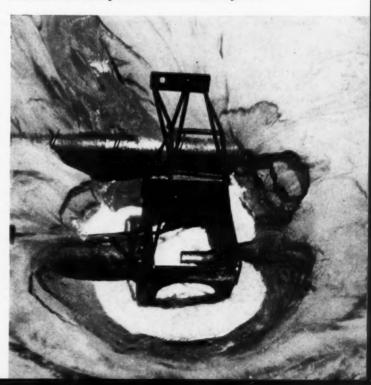
Because the discharge flow from collection boxes to the mixing chamber is by gravity, considerable care was necessary in planning the operations and in laying out the discharge lines to keep trenching at a minimum. Under this general excavation contract, the site is being cut down to El. 40, which, with the mixing sump set at El. 10, gives a 30-ft. drop in all discharge lines.

Sluicing started, of course, at the ocean end of the



MOMENTARY DROP in monitor pressure exposes collection box set in discharge pipe. Feeder line for eductor water is parallel to discharge pipe.

EDUCTOR (below) is simply a Venturi meter jet directed through collection box directly into discharge pipe. High-pressure jet gives sand-water mix starting momentum down discharge line.





BIG MONITOR, throwing 5-in. stream at 120-lb. pressure, dwarfs visiting firemen JACK THOMPSON, Los Angeles contractor and DON SHAW, manager, Southern California A.G.C. chapter.



DISCHARGE PIPES from dune area empty into pit next to screened sump shown at left. Additional water is added to mix in sump through system of movable weirs to dilute material down to less than 25 percent solids for long pump to deposit point on beach.

HEART OF SLUICING SYSTEM is pumping plant set near beach. Here two 28-in. pumps in tandem draw ocean water through 36-in. intake for supply to monitors, eductors and sump pit, while two more pumps kick excavated material as far as 6 mi. down the beach. All four pumps are driven by 2,500-hp. motors from Ft. Peck dredge plant.



site near the mix sump. Early sluicing opened up routes for the discharge lines, and these routes, at excavation floor level, are widened and lengthened in regular pattern. About 1,000,000 cu. yd. of material remains to be moved.

Eductor Principle

One monitor works with each eductor collection box. Under the high pressure available, sluicing is possible as far as 200 ft, from the jet. As the banks are cut down, the sand and water flow into the opening in the collector box, set in a frame that always projects above the flow for marking its exact location. The Venturi jet in the eductor keeps the collection box from clogging and gives the sand-water mix its initial momentum down the discharge line. The eductor principle is subject of a patent application by J. R. Sensibar, president of Construction Aggregates Corp.

Upon reaching the mixing chamber the materials enter a screened sump. Here, by means of movable weirs, fresh ocean water can be added as required to keep the mix going into the beach discharge line below 25 percent solids. The sump operator judges the amount of dilution water needed from readings of line pressure gages and watt meters indicating power being used by the pumps.

Along the beach the sand is discharged through Wye outlets against spoon baffles. These baffles spread the discharge evenly, and as the solids are pure, heavy sand, they settle rapidly into a smooth spoil bank that makes an excellent beach. No subsequent grading is required.

CONSTRUCTION METHODS — August 1948 Page 70 The beach is being built up from 200 to 600 ft. wide 4 ft. above high tide level. From the outer edge of the new beach the fill slopes off to ocean bottom, roughly El. —20.

The project is under the direction of the Los Angeles Dept. of Public Works, for which Lloyd Aldrich is city engineer, H. G. Smith is engineer of sewer design and A. G. Johnson is beach design engineer. J. R. Sensibar, head of Construction Aggregates Corp., devised the sluicing and pumping system. Al E. Randall is project manager for the contractors. The excavation contract runs \$3,494,000 for 14,100,000 cu.yd.



SAND PUMPING is tough on pump impellers, which are pulled every two weeks for inspection and repair. Here welder is building up worn spots with cast-iron welding rods.



SAND DUNES end up as new beach along 6-mi. stretch from El Segundo to Venice. This view was taken at start of job, with outfall sewer construction trestle in background. Sand in beach builds up repidly, requiring little direction and control,

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LOS ANGELES CITIZENS will enjoy new 6-mi. beach (below), from 200 to 600 ft. wide, built up from sewage plant site excavation. Dark streak in center of beach is discharge pipeline. Two-pump

booster station is located 11,000 ft. from main pump plant. Old shore line was at fence in front of buildings. Sewage treatment plant will clean up these waters, closed because of pollution.



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CONTRACT CONSTRUCTION and local projects are given big boost by attractive exhibit by Southern California A.G.C. at Los Angeles Construction Industries Exposition and Home Show.

California Contractors Spark Construction Industries Show

AS ONE OF the sponsors and a prominent exhibitor, the Southern California Chapter, Associated General Contractors, had a lot to do with the success of the Third Annual Construction Industries Exposition and Home Show at Los Angeles June 10-20. The exhibit and efforts of the contractors were a splendid example of contractor public relations. Intense interest

in the display shown by the public —125,000 strong—more than paid the contractors for their efforts.

The show was held in the vast Pan Pacific Auditorium at Los Angeles. The A.G.C. took the largest space available, 22x68 ft., for an interesting and educational exhibit presented in modernistic style. In keeping with the contractors' theme, "Southern California of the

Future", they depicted models, dioramas and descriptive plaques of large civic and private ventures both under way and planned for early construction. An outstanding feature was a model of the proposed Los Angeles parking system, part of which is already under construction.

An information booth at the exhibit was staffed throughout the show. An attractive bulletin, describing the exhibit and extolling the virtues of the contract system of construction, was passed out to all visitors. The A.G.C. chapter is one of 15 associations owning and sponsoring the annual show. Next year the contractors hope to include a construction equipment exhibit in an adjoining outside area. Don Shaw, manager of the chapter, was largely responsible for the exhibit, designed by E. H. Daniels, noted industrial designer.



BUILT to the graceful proportions of a long drill steel, towering 6 ft. 7 in. John R. Austin literally tops all tunnel men. In that gangling frame that has won him the nickname "Long John," there is plenty of ability, explosive energy, and courage-ability to tackle the Lawrence Adit section of San Jacinto Tunnel, one of the toughest jobs in underground history; energy that has hung up several world's tunneling records, including 1,000 Palms and Carleton; and courage that routed him out of a sick bed in 1943 at the frantic appeal of official Washington to open up a fire-blocked tunnel on a transcontinental railroad. Fast tunneling-no matter how tough-and John Austin go together like ham and eggs.

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Long John went underground at an early age. Born at Monroe, N. C., April 24, 1887 he cut his construction molars on a Pee Dee River dam at 17, becoming a foreman there, but soon joined Lane Bros. Construction Co., of Alta Vista, Va., on the Jones Falls drainage tunnel under the city of Baltimore. Here he became a tunnel superintendent at 21. After 12 years with Lane Bros. he went with Dravo Contracting Co. on Ohio River dams for 6 years.

Austin went back to tunneling with the Metropolitan Water District of Southern California as superintendent on the Coachella Tunnels. Here he hung up a record of 1,101 ft. of hard-rock heading in 24 working days at 1,000 Palms No. 1. When the District took over San Jacinto Tunnel from the contractors in 1935 he directed driving of



JOHN R. AUSTIN

the Lawrence Adit section, where unprecedented water flow had to be controlled.

After 6 years in California, John went to Colorado to drive Denver's Jones Pass water diversion tunnel for Broderick & Gordon. His success here led to his selection by the Golden Cycle Corp. to drive the now famous 6-mi. Carleton Tunnel to drain the deep Cripple Creek mines. The Carleton Tunnel records still stand—32,000 ft. in hard Pikes Peak granite in less than 2 years from a single portal, a daily average of 53 ft., and a top 24-hr. advance of 78 ft.

Next he became associated with Stiers Bros. of St. Louis in driving the west end of the 13 mi. Alva B. Adams Tunnel on the Colorado-Big Thompson project for the Bureau of Reclamation. While on this job he was asked by Secretary Ickes to rush his crews and outfit to the fire-stricken Tunnel No. 10 on the D.&R.G.W. Moffat Division after three Denver firemen had been killed fighting the fire. When the Adams Tunnel was shut down because of the war, Austin and Stiers Bros. hurriedly drove two 3-mi. drainage tunnels at Ouray and Leadville, Colo., to open up strategic metal reserves.

Upon completion of the Adams Tunnel, John organized his own company, driving a highway tunnel in Clear Creek canyon near Idaho Springs, and building the dikes for Granby Dam. At present he is finishing up the four Horse Tooth Tunnels on the Colorado-Big Thompson project jointly with B. G. Gordon and Martin Wunderlich. He is also furnishing equipment and key men to a hydro project in Switzerland.

Austin's tunneling success is due partly to his driving energy, but mostly to his common-sense construction procedure. Long ago he established a bonus system, based on footage per shift that includes everybody on the job. He gets fast progress by cutting down waste motion, by synchronizing operations and by full mechanization wherever possible. He has developed and improved a lot of tunnel equipment.

Though he drives his jobs hard, he drives himself beyond human endurance. At times his temper explodes like a 90-hole round; again he is as gentle and soothing as a murmuring sump pump. John R. Austin is becoming a legendary character in Colorado tunnel circles. Legendary or real, that character is leaving a mark in the art of tunneling that will benefit underground work for a long time to come.



Bulldozer Shapes Embankment and Recovers Suspended Solids on . . .

Highway Fill Pumped into Place

SHAPING the embankment by bulldozer helps make a 9,000,000-yd. dredged highway fill pay off. For best results the contractor coordinates the bulldozer work and a dragline with pumping through alternate branches of 30-in. discharge lines. By these means, the Hydraulic Dredging Co., Ltd., Oakland, Calif., has averaged 20,000 cu. yd. a 24-hr. work day on the

Columbia River Highway fill in Oregon—at least that was the progress until the recent spring floods when the Corps of Engineers commandeered the dredge for emergency work. This was after the dredge had continued in operation through the worst of the flood.

To shape the fill, a dike is first thrown up by a Northwest dragline. Then as the dredged material enters the fill, it is terraced by a bulldozer. As this forces a decrease in the velocity of flow, the sand particles in suspension are easily deposited.

A minimum of dredge set-ups keeps the dredge pumping as continuously as possible. At each setup, the dredge pipe branches two, three, four, or even five ways. Fill is placed at one spot while dredge

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CRANE AND BULLDOZER (below) build dikes as first step in placing Columbia River Highway fill by pumping dredged material.

DREDGE PIPE (below) is shifted and extended on fill by crane boom on rear of bulldozer.







BULLDOZER has formed terraces, and fill is being deposited at maximum rate. Columbia River is in background and old highway at right beyond Union Pacific tracks.



DREDGE PIPE is set up on high falsework alongside overpass to place fill for structure approaches. Dredge is in background.

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MATERIAL IS DIRECTED (below) to fill through any one of three pipes. Large-diameter flap valve handle helps quick change of direction. E. G. "HYDRAULIC" SMITH, project manager for contractor, points at fill.





BULLDOZER works close to dredge discharge in building up retaining dikes.

pipe is added to the other headings and the fill is being shaped. Knowing just how long to fill at any one location is a trick that requires judgment based on long experience with dredged fills. Expert judgment here pays off in volume of solids recovered from the dredged material.

Price for placing 7,500,000 cu. yd. of dredge fill is 26.6c. per cu.yd.

For 1,900,000 cu.yd. more it is slightly less as the pumping distance for this portion is shorter. The contractor has been placing excess material so enough will be available for shaping the fill to the required highway cross-section.

Shaping is done by bulldozers, and in some cases, carryalls. A rock toe wall to help hold the fill was first placed under a separate contract. Other rock protective work will be done later.

There has been little experience in pumping highway fills along rivers subjected to flood flows of more than a million sec.-ft. Most of this fill was subjected to such a flow in recent Columbia River floods and surprisingly enough there was no extensive damage. The dredge operated through the flood until commandeered by the Corps of Engineers for emergency work.

This fill is being placed in the Columbia River by the "Clakamas," a 30-in. suction dredge rented by the contractor from the Port of Portland. This dredge can pump through 8,400 ft. of pipe. On this job as much as 2,500 ft. of float-supported pipe is used. Average fill rate is 20,000 cu. yd. per 24-hr. day. Maximum has been 35,000 cu. yd.

This is a project of the Oregon State Highway Commission under R. H. Baldock, state highway engineer. Carl A. Peterson is resident engineer for the state. E. G. "Hydraulic" Smith is project manager for the contractor and Capt. Elmer Norman is dredge captain.

Dredge Carries Big Stick

NEW BOOM on Olympian Dredge Co.'s bucket-type dredge Neptune is 242 ft. long, one of longest in country, and weighs more than 40 tons. Constructed and rigged by Bethlehem Steel Co. shipbuilding division at San Francisco, "long stick" is 24 in. square, put together in four pieces with three scarfs, each 26 ft. long. Dredge will resume its job of building levees on Sacramento River in California.

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Trailer-Mounted Transformers Serve Ft. Randall Dam Job

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PORTABLE SUBSTATIONS, mounted on trailers, are stepping 33,000-v. commercial power down to 4,100 v. for three electric shovels at Ft. Randall Dam on the Missouri River in South Dakota. The transformer units were designed by Western Contracting Corp., Sioux City, for their Kanopolis Dam project, where they could be moved around the job to cut down line losses and keep the higher voltage within 2,000 ft. of the shovels.

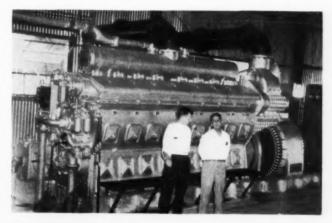
The contractor built a 12-mi. transmission line into the job from the Northwestern Public Service Co. distribution network at Ravinia, S. D. Because this is the stub end of the system, current supply fluctuates badly, so Western installed a 1,000-kw. G. M. diesel generator at the job, inter-connected with the commercial line as a steady source of power.

Western is also using a lot of diesel earthmoving equipment. They took advantage of the terrain to install a gravity fuel system. Three 15,000-gal. storage tanks were set just under a hill below an access road. Fuel supply trucks fill their tanks by gravity, and the tanks, in turn, serve the job fueling stations by gravity.

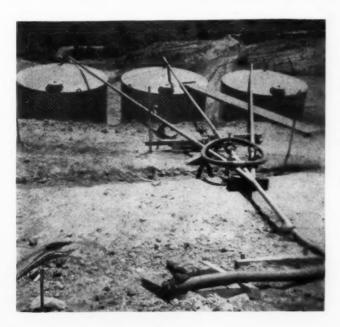
Dick Heitman, chief engineer for Western Contracting Corp., supplied the accompanying pictures.



PORTABLE SUBSTATIONS step down commercial current from 33,000 to 4,100 v. for electric shovels at Ft. Randall Dam on Missouri River. If necessary, stations can be moved to follow shovels in pits and keep low-voltage line down to 2,000 ft. to reduce line losses.

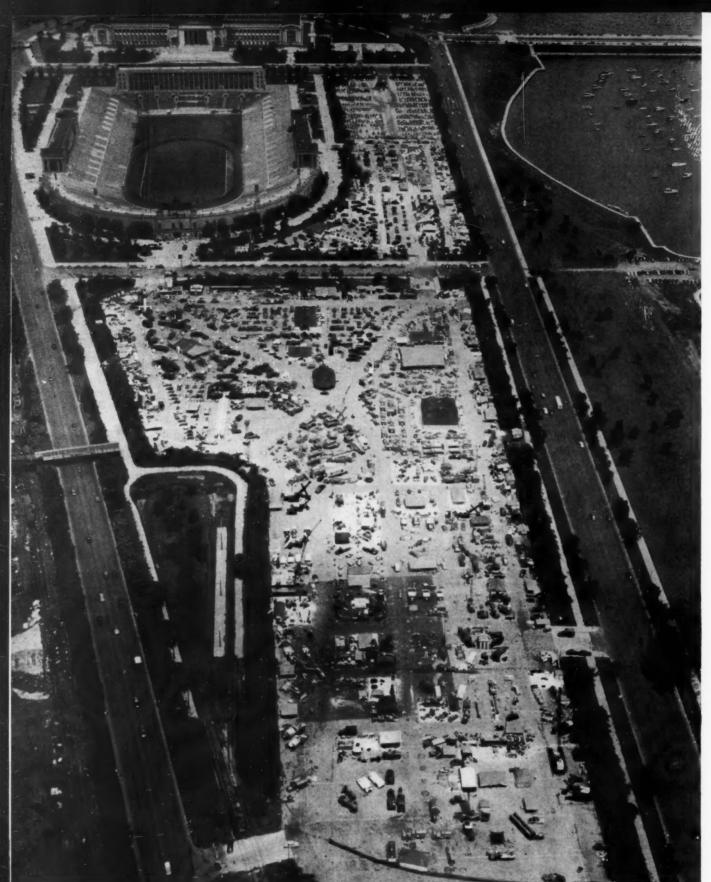


ON BIG JOBS contractors sometimes have to go into power business. At Ft. Randall Dam, Western Contracting Corp. installed this 1,000-kw. G.M. diesel generator to augment fluctuating commercial power supply.



BY TAKING AD-VANTAGE of job terrain, Western supplies all fuel to diesel equipment at Ft. Randall by gravity. Three 15,000-gal. storage tanks (left) are filled by gravity, and they supply various fueling stations (right) without pumping.





Photo, Oscar, Chicago

BLIMP'S EYE VIEW of 1948 Road Show reveals mechanical might of construction industry spread over 30 acres of outdoor space. Numerous smaller exhibits and educational displays are housed beneath stadium stands.

Highlights of the Road Show

GREATEST IN HISTORY was the 1948 Road Show at Chicago last month, when 350 exhibits were spread over 1,250,000 sq. ft. of space under and adjoining Soldier Field. It was the first outdoor Road Show ever staged by American Road Builders' Association, and as such, has probably set the pattern for future shows. No building in the country could handle a display of this size. Additional emphasis was given the show by having much of the equipment animated. next best thing to actual operation. Estimated value of equipment shown runs from 40 to 50 million dollars. Several exhibitors claimed they had over a million dollars worth of equipment on display.

As to be expected, there is an increasing trend toward putting machines on rubber tires, including bulldozers, large and small, batching plants, cranes and shovels, and even dual-drum concrete pavers. The long-time trend of more precise control of operations through air, hydraulic and cable systems continues, with resulting ease to the operators.

A 4-way trend in equipment development is noticeable from an examination of the displays. Larger and larger machines are being offered for greater capacity, a trend paralleled by speeding up smaller machines for increased capacity. Many specialty units were shown, each designed for one purpose alone. A trend in the opposite direction finds more attachments and auxiliary equipment being hung on basic units to increase their versatility. Lastly, scores of small units—some incredibly small—were



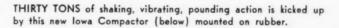
LARGEST of all tractors on display is this huge mock-up of International's new TD24 tractor, a realistic reproduction in wood, 15 ft. high and 30 ft. long. Its innards produced sweet music.



ON TOP of world, a revolving world at that, is Allis-Chalmers' new giant HD19 tractor.

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ITS TAIL kicked up in non-operating manner, P&H Single-Pass Stabilizer (below) spins its blades and cutters over a mirror for easy view. A revolving ripper on front end is promised soon for ripping up bituminous surfacing.









WOOLDRIDGE joins parade of big two-wheel tractor wagons with 18-yd. job.

shown, many apparently coming into construction from the agricultural field. Their purpose is to cut further the need for hand labor even on simplest of operations.

The accompanying pictures must be considered only as indicative of interesting trends and types, supplementing the Pre-Show presentation of most of the equipment exhibited, published in the July Construction Methods. Pictures shown here do not include even all of the new, interesting and unusual equipment. They are merely a sample of Road Show Highlights.



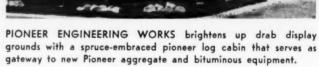
UNDISPUTED IN SIZE of bulldozers is this 750-hp. LeTourneau, 4-wheel model carrying 16-ft. blade that will kick along 8 yd. and moves up to 14 mph. It was one of several LeTourneau 4-wheel bulldozers on display.



TWO-AXLE STEERING for sharp turns and angle dozing is LaPlant-Choate's idea of how rubber-tired bulldozers ought to be made. It's a neat, hydraulic-controlled rig that creates lots of attention at Show.



ANOTHER NEW SCRAPER is Heiliner, two-wheel 150-hp. cable-controlled rig.



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AMONG SPECIALIZED UNITS designed for one specific purpose is this Buffalo-Springfield trench roller (below), a natural for highway widening work.

REAR DUMP ROCK WAGON (below) on rubber is new idea of R. G. LeTourneau, Inc. It's designed mainly for quarry work.





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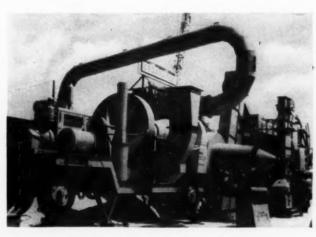
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NEW IDEA in dual-drum mixers is this 16-E Koehring Twin Batch mounted on rubber and equipped with elevating boom for high form placement.



COMMENTS on this Wagnermobile Scraper Loader, wheeled into Chicago from Portland, Ore., under its own power, ran all way from a "monstrosity" to "marvelous." At any rate. this 6-wheel reversible rig carrying 15-yd, scraper and bulldozer on same frame, is about most spectacular unit on display.



DWARFING production end of Iowa's Cedar Rapids big asphalt plant is dust-collection section. Plant is so big it is impossible to get good picture of entire unit.



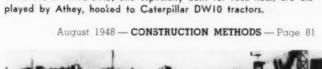
TWO NEW WAGONS, one especially built for rock haul, are displayed by Athey, hooked to Caterpillar DW10 tractors.



ANOTHER EXAMPLE of trend to small rubber-mounted bulldozers is this Lull unit, riding on Case wheel tractor.

FRONT-END LOADERS (below), from half-pint capacity on up are

sprinkled throughout show. Good example of these new rigs is this





STRUTTING around LaPlant-Choate yard in grand style is L-C scraper pulled by new two-wheel L-C tractor. It's a combination that attracts lots of attention.

Continued on next page

EUCLID gets back into scraper business after long lapse with husky 18-yd. rig (below) powered, of course, by Euclid tractor.





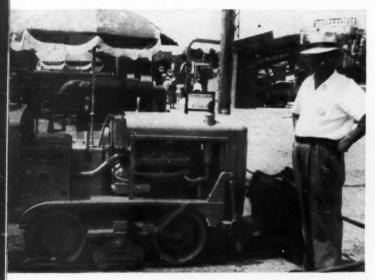
Highlights of the



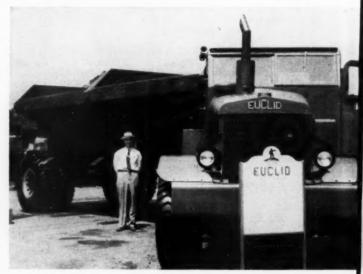
LONG-EXPECTED two-wheel Caterpillar tractor, hooked to scraper, takes its first bow at Show. It will be known as DW21.



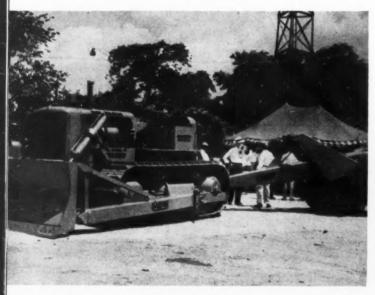
NEW IDEA in heavy compaction units is this O. J. Porter Super-Compactor in 100-ton size backing up that old super-compactor himself, JIM PORTER. Jim turns out 200-ton sizes of these pneumatic-tired rollers in case you really want to compact.



ANOTHER SMALL UNIT is this pocket-size rubber-track utility compressor shown by Schramm. Note tiny bulldozer on front end. "Everybody else is building bulldozers, so we thought we might as well join the parade," says Henry Schramm, shown here, "and besides it's mighty handy for trench backfilling."

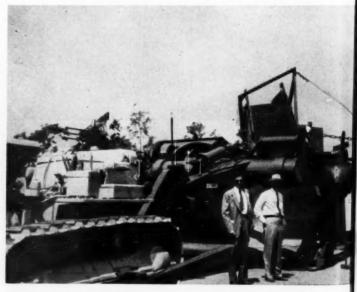


TWIN-BODY ROCK WAGON on single frame is Euclid's solution of problem of large-capacity haul units that must dump into small hoppers and crusher openings.



AMONG HEAVIER BULLDOZERS is this new hydraulic-controlled Baker unit on Allis-Chalmers HD19 tractor. Baker heavy-duty rooter adds to impressiveness of this part of exhibit.

100



TOWERING ABOVE VISITORS is big Euclid Loader sporting 54-in. belt that loads wagon in half minute.

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Road Show . . . Continued

the



SMALLEST BULLDOZER at Show on crawlers is Oliver Cletrac, designed for light grading and backfilling. It's not much bigger than a watch charm.



EXAMPLE OF INCREASING equipment versatility is Adams rotary Snow Plow mounted on front end of Adams grader. Snow is picked up and thrown off to one side.



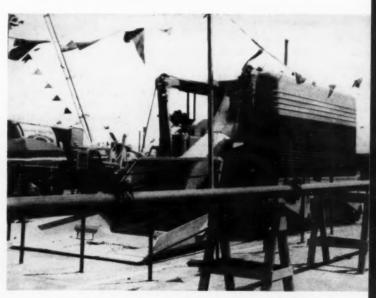
SMALL DITCHERS, designed for fast utility work with minimum disturbance to ground, are typified by this neat Buckeye Pony Ditcher that cuts 6-in. trench 4 ft. deep.



AMONG smaller equipment on display is this handy Barber-Greene Runabout Ditcher, mounted on International truck for utility work. It cuts a trench only 5 in. wide, but up to 4 ft. deep.



INDICATIVE of fast, mobile digging equipment on wheels is this trim $1\!\!/_2$ -yd. Thew-Lorain MotoCrane backhoe.



STREAMLINED like diesel locomotive is this new Chain-Belt dualdrum 34-E paver, redesigned from skip tip to boom tip.





SOLAR HOUSE at Barrington, Ill. built by Jensen & Rieke, from plans of George Fred Keck, architect, is designed and oriented to make practical use of sun to provide natural heat and light through whole walls of glass formed by Thermopane, Libby-Owens-Ford product, comprising two insulating panes of glass separated by dry-air space and sealed around edges by metal-to-glass bond. House faces south to catch warming rays of winter sun and has overhanging roof to shield windows from summer sun.



1,500-BED TRIPLER HOSPITAL nears completion for Army in Hono-Iulu as joint venture by Morrison-Knudsen Co., Inc. and Peter Kiewit Sons Inc. Fourteen-story reinforced concrete and structural steel main hospital and complementary structures occupying 365-acre site, cost \$36,000,000 and were designed to resist earthquake shock. Construction supervision by Col. B. M. Harloe, Honolulu District Engineer.

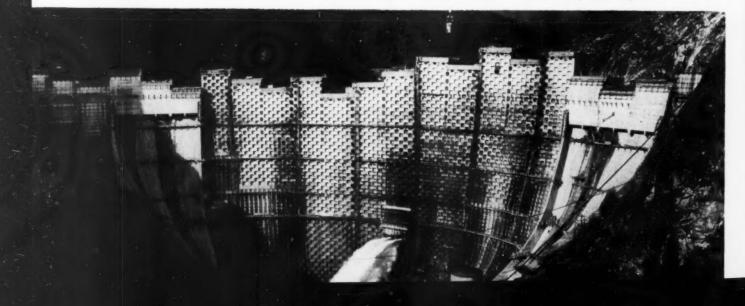
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BUILT IN FOUR STAGES to attain ultimate height of 675 ft. is Ross Dam (below), concrete structure on Skagit River in Washington, built for Seattle Department of Lighting. Current thirdstage construction is joint venture of Morrison-Knudsen Co. Inc., J. F. Shea Co., Inc. and General Construction Co. Fourth stage



HIGH MILITARY BRASS congratulates Associated General Contractors on progress in organizing reserve construction units for Army. Seated with A.G.C. president DWIGHT WINKELMAN (right) are Secretary of Army KENNETH C. ROYALL and Chief of Engineers LT. GEN. RAYMOND A WHEELER. Backing them up are BRIG. GEN. JULIAN W. CUNNINGHAM, Army General Staff, WELTON SNOW, in charge of the program for A.G.C., and A.G.C. managing director H. E. FOREMAN. Association has and A.G.C. managing chector in a constraint one year ago.
U.S. Signal Corps photo

will involve placing additional concrete on downstream face of dam, shown herewith with checkerboard indentations to insure adequate bond between old and new concrete. Supervising project for Seattle Department of Lighting are E. R. Hoffman, superintendent, and W. B. Wolfendale, project engineer.





KANOPOLIS DAM, first major flood control dam and reservoir unit of Pick-Sloan Missouri Basin program, is dedicated May 31. Dam on Smoke Hill River in Kansas will be earth structure 3 mi. long and 131 ft. high. Key speakers at dedication ceremony were: (left to right) COL. PAUL D. BERRIGAN, Kansas City District Engineer; MAJ. GENERAL LEWIS A. PICK, Missouri River Division Engineer and GOV. FRANK CARLSON of Kansas.

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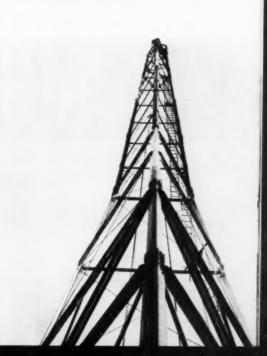


PRE-CONVENTION CONSTRUCTION is undertaken, with aid of ceiling-high scaffolding, to improve acoustics of Philadelphia's Convention Hall, scene of midsummer meetings of delegates of Republican and Democratic parties to select Presidential candidates. Renovation job involved application of acoustical material to ceiling of hall to minimize reverberations of forensic efforts of political spellbinders.

Wide World photo

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TELEVISION TOWER 287 ft. tall tops 36-story Daily News Building for Station WPIX.

Television Tower Tops Tall Building

ERECTING a 287-ft. steel television tower from ground level would be quite a job, but when the structure sets atop a 36-story New York skyscraper, with its base 467 ft. above the street, the job becomes a notable achievement. Turner Construction Co., New York, has just finished the difficult project of installing the tower for the New York Daily News television Station WPIX on top of the newspaper's building on East 42nd St., and did the work within a fast 4-month completion schedule. Besides erection of the tower, the job included new two-story 8-room transmitter facilities on top of the 36th floor roof, and a new studio built on 10th and 11th floors above a 9-story wing of the existing building. Architects and engineers for the improvements were Alexander C. Crosett & Associates.

Sixty-five tons of steel were hoisted 36 stories up the face of the existing building for the 37th floor addition and the television tower. All materials for the construction work on the 37th floor had to be raised 467 ft. from street level, and the service elevator could be used only for material not over 10 ft. in length.

A small derrick with a 40-ft. boom was brought up in the service elevator in pieces and assembled on the roof. With this, the larger hoisting equipment, a stiffleg derrick with a 60-ft. boom, was raised from the street. The second derrick hoisted structural steel

ANTENNA, 44 ft. 8 in. long (below), equipped with "bat wings", is single length of steel pipe tapering in diameter from 8 to 4 in. and weighs 11/2 tons. It is here shown after being hoisted by stiff-

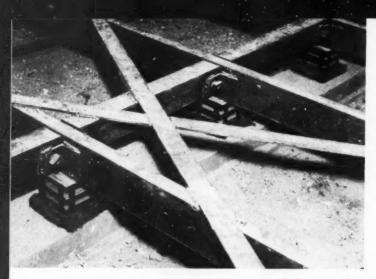


PYLON consisting of three lengths of 20-in.-dia. flanged pipe, bolted together, is raised to top of tower, above which it extends 28 ft., to hold antenna.

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leg derrick 467 ft. from street to top of building. Bottom of antenna telescopes into top of pylon. In background is Chrysler Building tower.





ISOLATERS, comprising alternate layers of steel, felt and rubber, support floor beams of television studio to dampen vibration caused by newspaper presses.

from a private right-of-way to the west of the News Building to the roof of the 36th floor. The largest single piece of steel raised by this method was a $2\frac{1}{2}$ -ton 36-in. I-beam going into the tower base. Other materials, including 150 cu.yd. of concrete, were brought up in the service elevator.

The construction on the 37th floor includes eight rooms—a transmitting room with a ceiling 4 ft. higher than the remaining area, a console room, locker and wash rooms, and two stairways. The new 37th floor area is 58x80 ft.

Because of the unusual construction of the 36th floor of the News Building, which carries a meteorological station, the contractor built a ceiling but no exterior walls for the 37th story addition. A three-story wall already existed above the 36th floor surrounding the meteorological equipment.

Steel beams, extending between the existing outside walls of the building, were put in 10 ft. above the roof of the new floor, to carry the television tower. To support the added weight of the tower it was necessary to reinforce columns of the original building on the 36th and 34th floors.

The television tower consists of four sections. The base is 35x58 ft. and 10 ft. high. The tower itself is

 $207\frac{1}{2}$ ft. high tapering from 30 ft. square at the bottom to 5 ft. square at the top. The pylon, which is in three sections, two above and one below the tower top, extends 28 ft. above the tower, and is 20 in. in dia. The antenna on top of the pylon is a single piece of steel pipe tapering from 8 in. to 4 in. dia. at the top, weighs $1\frac{1}{2}$ tons and is 44 ft. 8 in. high. On it are projections characteristic of television antennas called "bat wings." They are $3\frac{1}{2}$ ft. long and 2 ft. wide, spaced the length of the antenna in groups of four. A red beacon for airplane protection tops the structure.

In order to raise the pylon, a wooden pole was lashed to the tower, extending above it. The pylon sections were hoisted from the top of this pole. The wooden pole was then lashed to the side of the pylon and the antenna was hoisted and dropped into place on the pylon.

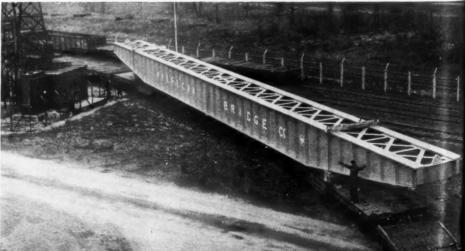
The "suspended" television studio is the largest room in the new 10th and 11th floor built by Turner on top of the plant section of the building. The area is 54x110 ft. and there are 12 rooms on the 10th floor and seven on the 11th. For this construction work 110 tons of steel were brought up over the side of the building from the street by derrick. Steel frame construction, with cinder concrete floor arches and face brick walls, was used in this area.

The television studio, 29x46 ft. and two floors (19½ ft.) in height, is built as a room within a room to make it as vibration- and sound-proof as possible. Between the inner and outer walls are about 8 in. of insulation, consisting of layers of rock wool and plaster on lath. The walls inside the room are covered with perforated Transite and have broken surfaces to provide more effective sound suppression. Special care was taken in the designing of this area to combat the vibration from the newspaper presses housed on the lower floors of this section of the building.

The inside room is actually suspended in the outer shell. The ceiling is hung on spring hangers at 4-ft. intervals, and the steel floor supports are laid on "isolaters", islands of steel, felt and rubber which raise the floor of the studio above the concrete base floor. The space between the concrete and the studio floor is filled with rock wool.

Nightmare to Freight Crews

is this 162-ft. plate girder span, weighing 150 tons, en route from the Gary Plant of American Bridge Co. to the new Sheboygan River Bridge for the Chicago & North Western Ry. near Sheboygan, Wis. American Bridge says it is one of the longest girders ever shipped complete. It takes five flat cars to move it, two C.&N.W. special multitruck cars to carry the load, and three idlers at the center and each end.



LEGAL ADVENTURES OF TRACTOR CONN



By recounting the experiences of Tractor Conn, who symbolizes the average contractor, this series of articles, each based on the decision of an American court and presented in plain, non-legalistic terms, is designed to help construction men avoid costly legal pitfalls.—Editor

The Case of the Correspondence



"Your bid is accepted provided you will make the alterations attached hereto, and we will have a contract prepared when I call at your office," the owner wrote.

"Yours received and the suggested alterations are satisfactory, so presume that I can consider that I

have the contract," Tractor Conn replied.

"You can take it for granted that the contract is yours, but I would advise you not to begin work until I come," the owner wrote back.

Then the question arose as to whether this correspondence constituted a binding contract, and the Alabama Supreme Court decided that it did not in the case of Bissinger vs Prince, 23 Southern Reporter 67.

The Case of the Pugilistic Owner

Tractor Conn had practically finished his contract, the owner was inspecting the building, and some words of wrath and bitterness passed between the parties.

"You're a thief and a swindler," the owner exclaimed, landed one on Conn's jaw, and he went down for the count.



"Get out of my building and never come back," the owner ordered, when Conn had regained a vertical position—and Conn went.

"I want you to complete your contract at once," the owner telephoned the next day.

"I'm all done and I'm on my way to my lawyer's office now to file a lien on the building," Conn told him.

"You are not entitled to a lien until you have completed your contract," the owner argued, but the New York Courts decided in Conn's favor in the Sproessig case reported in 17 N.Y.S. 839, following the general rule that should Conn abandon his contract he may forfeit his right to a lien, but he may still maintain his lien if the abandonment is due to the fault of the owner and Tractor Conn is free from fault and justified in abandoning the work.

The Case of the Hotel Contract

Tractor Conn had bid successfully on the Empire Hotel and gave the usual surety company bond. The surety company had to finish the job, learned that Conn had deposited the money received on the hotel contract with the Brick Bank under the name of "Empire Hotel Account," and demanded the credit balance.



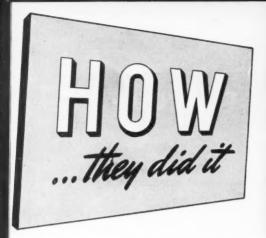
"That deposit was for the express purpose of paying the claims under the hotel contract," the surety company pointed out.

"First we ever heard of it," the bank retorted.

"The very form of the account—Empire Hotel—was notice that that's what the money was for," the company contended, sued the bank in the California courts, and lost.

"Tractor Conn may establish an account in a bank under a special designation or earmarked as a particular account, and yet, in the absence of an agreement with or instructions to the banker that the account so earmarked is a special deposit or is to be used for a specific purpose, the moneys deposited therein are to be regarded as belonging to the general account of Tractor Conn and may be so treated by the bank," said the court in ruling in favor of the bank.

More Legal Adventures of Tractor Conn Next Month





FOR FLOOD PROTECTION as rising waters of Columbia River threatened Reynolds aluminum plant at Troutdale, Oregon, a "sandbag factory" was established in the field and 5 Scoopmobiles and 2 Mixermobiles were rushed into service to handle sand for filling burlap bags which were piled up along river to hold back flood water.





PREFABRICATED BY WELDING are steel wall panels (right) for group of residential buildings erected by Schroedel Construction Co., Milwaukee, Wis., at Sharewood, Wis. By use of Lincoln electrodes and welding machines wall panels were shop-fabricated of

Bethlehem open-web expanded steel studs welded between a channel cap and sill plate with 3/4-in. channel added between studs for horizontal bracing. After being hoisted to place panels were held by pipe clamps and then welded together (left).

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TO DETERMINE SUBSURFACE CONDITIONS that affect highway engineering problems federal Public Roads Administration makes use of a seismograph. Explosion in ground creates tremors or sound waves that travel at different speeds depending on density of underground material—highest speed in solid rock and slowest in loose soil. Apparatus records time sound waves take to travel from "shot point" to various detectors. This in turn indicates character of ground through which waves traveled.

SIX INTERNAL VIBRATORS are attached to Blaw-Knox spreading machine to consolidate concrete in 18-in.-thick slab for Army airfield runways on West Coast designed for gross plane load of 300,000 lb. Battery of six vibrators is suspended almost vertically into concrete from horizontal arm extending from form to form. Vibrators pulsating at 7,500 rpm. are staggered in position about 2.54

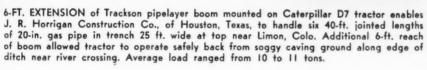


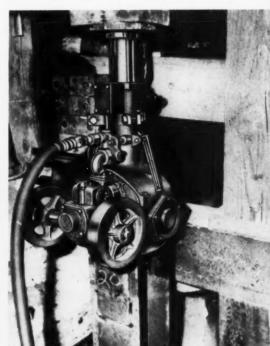


TRACTOR-DRAGLINE UNIT loads gravel near Williams, Calif., for P. J. Moore & Son, contractors of North Sacramento. Equipped with Hystaway boom and bucket Caterpillar D6 machine has handled as much as 1,080 cu. yd. in an 8-hr. day.





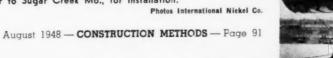


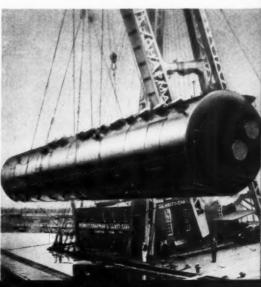


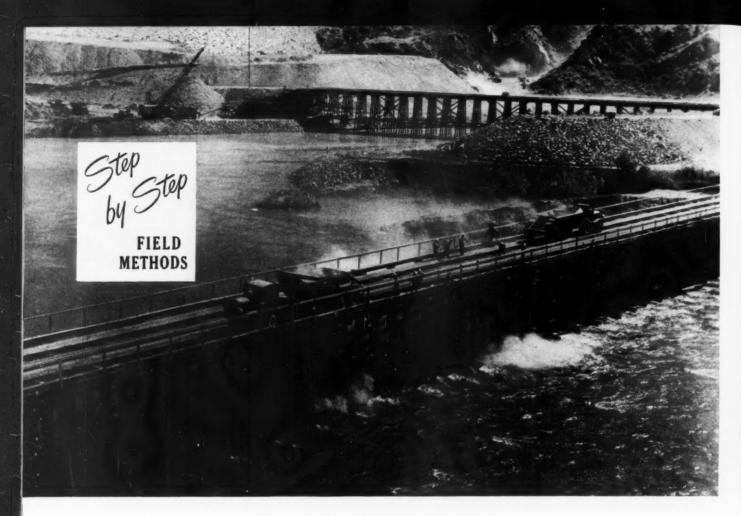
IN SINKING PILING for building foundation which showed signs of requiring additional support Walter W. Oeflein, Inc., Milwaukee, Wis. builder, employed a Duff-Norton air motor power jack to supersede manual efforts. With mechanical equipment, sinking was speeded up to rate of 2 to 5 ft. per min., depending on character of ground penetrated.



TOO BIG FOR RAILWAY OR HIGHWAY TRANSPORT was this 155-ton 180-ft.-long Lukens Monel-clad steel petroleum fractionating tower (right) built by M. W. Kellogg Co. for Standard Oil Co. (Indiana). Transport problem was solved by lowering tower into New York Bay, towing it as it floated (above) up Hudson River, through New York Barge Canal, Lake Erie, Lake Huron, Mackinac Straits and Lake Michigan to Chicago where barge carried it up Missouri River to Sugar Creek Mo., for installation.







Euclids Dump Rock From Davis Dam Trestle as . . .

Colorado River Loses Another Battle

All Photos by R. G. Manning, Utah Construction Co.

A 56-HR. BATTLE with the Colorado River ended in successful diversion of the stream late in June at the Davis Dam job. Forces of the Utah Construction Co. went into action early Saturday, June 26, with all available bottom-dump Euclid trucks in operation. Loaded at quarries on each side of the river, these trucks dumped as they shuttled across a trestle with decking just wide enough for the tires.

The plan was to raise the level of the fill uniformly and gradually force the river at right angles down the diversion channel that had been under construction for 2 years. Quarries had been made ready on both the Arizona and Nevada sides of the river so the shuttle system could be used. The rock was broken in pieces 2 to 3 ft.

in size. These were small enough to drop through the 3½-ft. slots in the trestle and, it was hoped, heavy enough to sink directly to the bottom without being swept downstream.

By the first night, rock began to show above the water surface and by the following night, the diversion was complete except for a 40-ft. section near the center of the river. Here the river flowing at almost 20,000 sec.-ft. concentrated its forces and developed a current so swift that the heaviest rocks were carried away. A 12-hr. fight to fill this gap by dumping from the trestle was fruitless. Everything was carried away.

So the contractor devised an emergency procedure. A fill was made out from one bank on the up-

stream side of the trestle. Pieces of scrap steel were placed against the bents to hold the rock to be placed from the newly-constructed ramp. Then, all available end-dump Euclids bringing the largest available quarry rock operated on the ramp slowly to close the gap. This did the trick and except for shaping the rock fill and covering it with an impervious layer, the diversion was complete by 3 p.m. on Monday.

The rock fill involved only 29,000 cu.yd. of material, but it is estimated that almost one-third of this was washed downstream by the strong current. A downstream cofferdam was started just a few days later. Next comes the long process of excavating and dewatering the site of the earth-and-rock fill dam.

Only twice before in history has



1 DRAGLINES REMOVE PLUG separating diversion channel from Colorado River as first step in diverting river at Davis Dam. Trestle for diversion fill is in background.

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2 ARMADA of bottom-dump Euclid trucks (below) is ready to go from Arizona quarry at start of 56-hr. battle to divert Colorado River.

3 WITHOUT STOPPING, Euclids (below) dump closure fill through trestle as they shuttle back and forth. Men with shovels remove rock left on trestle.



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4 SWIFT CURRENT in final 40-ft. section sweeps rock away as fast as deposited in spite of 12-hr. continuous filling.



AS AN EMERGENCY STEP, scrap steel trusses are thrown against upstream side of trestle to help hold large rock in place. This scheme worked.



RAMP IS BUILT out from Arizona side so end-dump trucks can dump against steel. Gap has been narrowed to 20 ft.

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7 ALL AVAILABLE END-DUMP EUCLIDS (below) loaded with largest rock on hand are brought into action to make final closure.





8 BATTLE IS OVER and river flows through diversion channel at upper right as trestle is dismantled. Blanket of impervious material will next be placed over rock core.

the Colorado been diverted, once at Hoover Dam and once at Parker Dam. At Hoover Dam diversion took just 15 hr. but only 6,000 sec.ft. of water was flowing as compared with almost 20,000 sec.-ft. at Davis. At Hoover Dam 100 trucks were available to build the fill across the river. For closing the final 40-ft. section at Davis only 16 end-dump Euclids were available for hauling the closure rock.

H. F. Bahmeier is construction engineer for the U. S. Bureau of Reclamation. For Utah Construction Co. H. E. Williams is project manager and T. L. Terry is general superintendent.

Navy Tests Light Diesel Pile Hammer

A LIGHT DIESEL pile hammer picked up in Germany has driven piles up to 25 tons bearing in tests by the U.S. Navy Bureau of Yards and Docks at Port Hueneme, Calif. The hammer weighs only 2,000 lb., including a 1,100-lb. piston, 8.275 in. dia., that travels 6½ ft. Fuel is contained in a belly tank around the outside cylinder housing.

The housing rides on pipe leads supported by a stiffleg frame which can be collapsed for truck haul. The entire rig is mounted on a wheeled frame. A multiple-drum hand winch moves the frame, handles the pile, lifts the hammer and raises the ram for the first stroke, after which the hammer action is automatic through compression firing.

ure.

Fuel injection and air intake and exhaust features are simply designed. The fuel is injected at low pressure by a pump mechanism operated by the piston. Lanyards control the amount of fuel fed into the combustion chamber. Descent of the piston closes the exhaust

ports and compresses the entrapped air-fuel mixture to ignition temperature.

The hammer has a double effect in driving. Fall of the piston develops about 6,600 ft.-lb. of energy. As the piston compresses the airfuel mixture at the bottom of its stroke, this energy acts to break the skin friction of the pile and start it downward. With the explosion resulting from combustion, the pile then is punched down with a reaction equal to the force which starts the piston on its upward stroke.

As a result of the double action, the hammer drives a pile faster than would be expected from its weight and operating rate of 50 strokes per min. Consumption of light diesel fuel is about 0.8 gal. per hr., and its thermal efficiency of 17 percent is good for an engine of this design. The cylinder base is lubricated through ports from an oil pocket in the head of the piston. Consumption of lubrication oil is relatively high, about 1 pint per hr.





Present and Accounted For... A PAGE OF PERSONALITIES



FRANCIS L. BROWN, graduate of Rensselaer Polytechnic Institute, has been promoted to be Deputy Superintendent of New York State Department of Public Works. He was previously executive assistant to Superintendent Charles H. Sells.





NEW CHIEF ENGINEER of Board of Water Supply, City of New York, is JOHN M. FITZGERALD (left), succeeding ROGER W. ARMSTRONG (right), who retired recently to become Chairman of Board of Consultants. Mr. Fitzgerald, a graduate of Manhattan College, (1907) has served with the Boad of Water Supply since 1907. Mr. Armstrong, a graduate of Tufts College, (1901) started work with Board of Water Supply in 1908; he became Chief Engineer of Board in 1945.



DR. KARL COHEN has joined The H. K. Ferguson Co., industrial engineers and builders, as technical director for atomic activities. His previous experience includes design work at Oak Ridge, Tenn., and applications of atomic energy for the Standard Oil Development Co.



MAX W. MOODY, (right) of Walker-Moody Construction Co., Honolulu, was elected president of General Contractors Association of Hawaii at group's third annual meeting. Others shown here are: (I. to r.) GORDON H. SCRUTON, executive secretary; CHESTER R. CLARKE of Clarke-Halawa Rock Co., first vice-president, and GEORGE E. FREITAS, Pacific Construction Co., retiring president.

Page 96 — CONSTRUCTION METHODS — August 1948

J. A. DUNN, president of Hume Pipe Co. of New England, Swampscott, Mass., was elected president of American Concrete Pipe Association at its 40th annual convention in New Orleans, La. L. N. McCLELLAN, of Denver, Colo., has been named Chief Engineer of U. S. Bureau of Reclamation succeeding Walker R. Young, recently retired after 37 years of service. During last three years he had been Assistant Chief.

COL. WILLIAM E. POTTER Corps of Engineers, Department of the Army, formerly Kansas City District Engineer, is new District Engineer of Alaska, with headquarters in Anchorage.







CHOOSE . . . as others have — THE MODEL THAT BEST FITS YOUR NEEDS!



There's a Schramm Air Compressor, size and model, to meet your specific needs!

Below are listed nine of the many Schramm models, portables ranging from 20 to 420 cu. ft. of actual air, the stationary ranging from 2 to 600 cu. ft. displacement.

On all models performance records are evidence of their high quality. You will find the name Schramm written on every important page in compressor history.

Features you get in Schramm are: 100%

water cooled, assuring ideal performance summer and winter; mechanical intake valve, forced feed lubrication, and electric-starter starting. All Schramms are compact, lightweight, easy to operate.

We invite you to write today for fully illustrated catalog describing in detail each of the Schramm Air Compressors shown here... plus a wide range of other models. We feel the Schramm story is a good one, and offers you a sure way to get your many compressed air jobs done quickly, efficiently, and economically.

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20/35 Model Compressor



No. 60 Self-Propelled Compressor



Two-Wheel Trailer Mounting with Tool Boxes



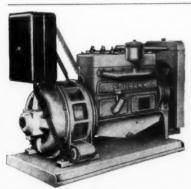
Skidded for Truck Mounting



Truck Mounted



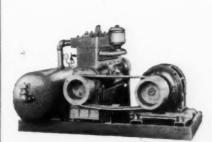
Diesel Engine Drive



Built-in Motor Drive with Cooling Unit and Starter

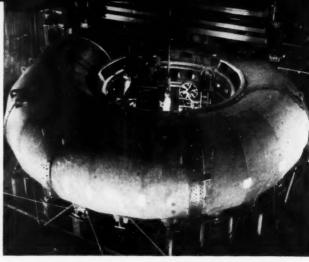


"V" Belt on Flat Pulley Drive



"V" Belt Drive with Air Receiver





LIKE GIANT DOUGHNUT appears this 56-ft.-dia. welded spiral casing for hydraulic turbine here shown in shops of Allis Chalmers Mfg. Co. during operation of machining 18-ft.-dia. speed ring prior to shipment from Milwaukee, Wis. for installation at Shasta Dam in California. Unit weighing 360,000 lb. is rated at 103,000 hp. at 1381/2 rpm. under 330-ft. head.



HUMAN CHAIN of more than 150 men walks long section of conductor cable to place in transmission line across Swiss Alps, part of Handeck hydro project. Locher & Co. and Ed. Zublin & Co., A.G., Zurich, are joint contractors for Kraftwerke Oberhalsi.



STEEP SLOPE is shaved off by Caterpillar diesel motor grader working for Hyde Construction Co. on road bank near Port Gibson Miss. Blade operates in almost vertical position.



UNDER ITS OWN POWER, this Northwest crane is crawling up steeper than a 30-deg. slope at Davis Dam. Two tractors on the right serve as anchors for system of blocks using tag-line of crane. Bucket line was fastened to rock-filled Euclid truck to prevent excessive swing of boom. Climbing this slope saved hauling crane 3 mi., according to Utah Construction Co. officials, contractor on the job. Concrete structure in background is gravity wall forming left bank of power plant forebay. Colorado River in background flows to left.

CONSTRUCTION METHODS — August 1948 Page 98

DURAPLASTIC

is highly adaptable for structural work

Atlas Duraplastic is specified by an increasing number of architects and contractors for structural concrete—for foundations, floors and walls—for stucco, pump-crete, gunite and slip-form work. It provides the proper amount of entrained air needed for satisfactory field performance.



Calls for no additional materials

No unusual changes in procedure are required—merely the same care and good workmanship regularly employed. Concrete made with Atlas Duraplastic is easier to place and finish because it's more plastic and workable... more cohesive and more uniform.

And is more durable

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1948

Duraplastic requires less mixing water for a given slump. It minimizes segregation and bleeding or water-gain; tends to reduce manipulation scale; fortifies the concrete against freezing and thawing weather.

Atlas Duraplastic cement sells at the same price as regular cement and complies with ASTM and Federal specifications. Send for further information. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, New York.





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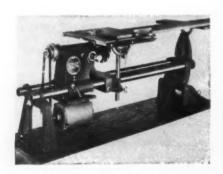
CONSTRUCTION EQUIPMENT NEWS

AUGUST 1948 REVIEW of Construction Machinery and Materials



SELF-PROPELLED DRILL—Self-propelled McCarthy rock-boring machine, according to the manufacturer, handles 4- to 12-in. augers for horizontal drilling up to 150 ft. in earth or rock formations. Individually operated jacks permit adjustment to the required drilling angle. Pow-

ered by a 25- or 32-hp. air-cooled motor, hydraulic-drive cylinder has 35-in. stroke, to give carriage an 8-ft. travel on the 12-ft. by $24\frac{1}{2}$ -in. heavy channel welded frame. Also available in truck-mounted and trench types. — Salem Tool Co., Salem, Ohio.



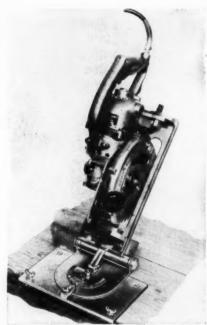
COMBINATION POWER TOOL—Adaptable for use as circular saw, lathe, sander, router, grinder and, by tilting hinge at right, a vertical drill press. Weighs 175 lb. Dimensions of Shopsmith in horizontal position are 59 x 18 x 21 in. Supplied with or without ½-hp. motor operating at 1,750 rpm.—Magna Engineering Corp., 465 California St., San Francisco, Calif.



LOADER AND AUGER—Designed for mounting on Case DAI industrial tractor. Loader of %-yd. struck capacity has dumping height of 8 ft. 6 in. Auger is designed for mounting on rear of tractor. Standard loader bucket is interchangeable with fork lift, angle dozer, coal bucket, wide bucket, and crane hook.—Construction Products Corp., 4345 East Imperial Highway, Lynwood, Calif.

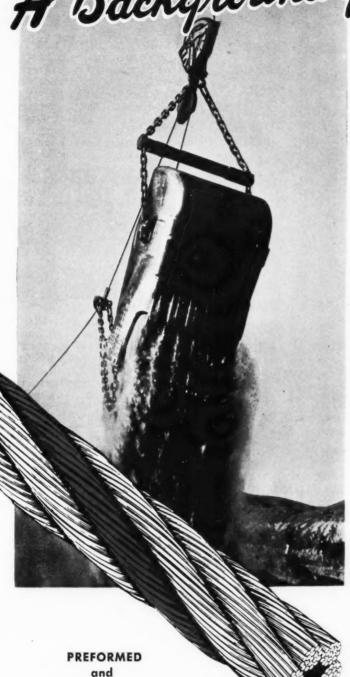


INSIDE - MOUNTED DOZER - Inside mount removes dozer stresses from track and engine frames and reduces wear on track rails, wheels and idlers. Operated by front-mounted hydraulic pump, leaving rear of tractor free for cable control units, hydraulic cylinders act directly on dozer arms. Has high lift of 48 in. for extra leverage when clearing trees and drops to 12 in, below ground. Cutting edge width is 7 ft. 113/4 in. Bowl is 36 in. high. Total length of unit is 13 ft. 6 in. and weight is 4,350 lb. Radiator guard has hinged faceplate for easy radiator cleaning. Equipment has accurate tilting and leveling adjustment. - American Tractor Equipment Corp., 9131 San Leandro Boulevard. Oakland 3. Calif.



SAW MOUNT—Designed to convert any electric hand saw into a rigid precision tool for making cuts at any angle, mount comes with two round and two slotted holes for easy attachment to any 6- to 12-in. portable electric saw. Saw is attached to mount by boring two holes in saw base plate and bolting. It can be removed and replaced quickly. Mount is fastened to shop bench by bolts and wingnuts. Saw mount is being marketed under trade name of "Jiffix."—Durham Bros., P. O. Box 620, Oakland, Calif.

A Background of PERFORMANCE



When you specify "HERCULES" (Red-Strand) Wire Rope, you select a product that has proved its dependability-time after time -by the acid test of actual service.

Such a long and consistent record of performance is not a matter of chance; instead, it is the result of many definite factors that have always governed the design and manufacture of "HERCULES" (Red-Strand) Wire Rope.

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BELT AND BUCKET ELEVATOR!

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By coupling standard 10-foot sections together (on your order) we quickly furnish a Baughman Hi-Speed Elevator tailored to your particular requirements. Constructed of rugged, durable high tensile alloy steel...30% lighter... 17% stronger...5 times more rust resistant.

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UNLOAD CAR AND CHARGE ELEVATOR IN ONE CONTINUOUS OPERATION!



Primarily designed for large users with semi-permanent trackage setups. Extends beyond rails on far side of car; collects material from under entire car width. Synchronized speeds of Car Unloader and Bucket Elevator keep flow smooth and even with no choking or overloading.

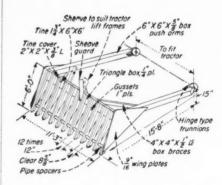
WELDING AND HEATING TORCH
—Three-hose torch using two tanks
of acetylene and one of oxygen, is
adapted to welding, heating or brazing broken parts on heavy machinery, for bending large diameter pipe
and wherever rugged maintenance
work is needed. Equipped with
quick-operating oxygen cut-off and
two-valve control for using propane,
natural or manufactured gas and
oxygen for heating purposes. Has
sturdy brass handle and Monel tiptube. Overall length is 51 in.;

weight 6 lb. 12 oz. Can be furnished

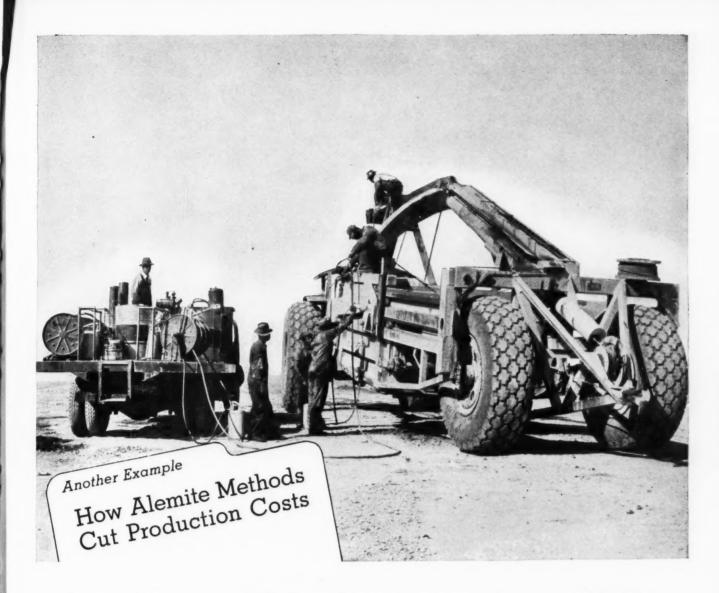
for welding or with multiple-flame

tips for heating.—Weldit, Inc., 990 Oakman Boulevard, Detroit 6, Mich.

MICARTABOARD — New product with surface of Micarta, a high pressure laminate, is available for walls in panels 4x8 ft., 5/32 in. thick. Made in a variety of colors and patterns. Has stain-proof and abrasion-proof qualities and is designed primarily for uses where surfaces receive hard wear.—United States Plywood Corp., 55 West 44th St., New York 18, N. Y.

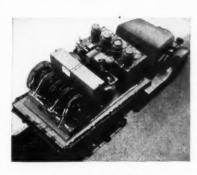


ROCK RAKE—Designed for use on the D-7 and D-8 tractors in place of the dozer and to be used like a bulldozer, this rock rake has been found very satisfactory for removal of oversize rock from embankment material in place and for consolidation of shot rock in borrow areas. The rake width is 11 ft. 3 in. and its 12 tines are 85% in. clear space apart. Construction of the rock rake permits rather rough usage and eliminates the wedging of rock previously encountered.—F. W. McCoy Company, 2 Santa Fe Drive, Denver, Colo.



Cuts "Time-out" for Lubrication Up to 35.3%

Adds More Productive Time to Machines Through Portable Power Lubrication



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You're Looking at a Modern Compact, Speedy Lubrication Unit

Actually, it's a super-service unit mounted on a light truck. Alemite Portable Service Stations come in various combinations. High and low pressure grease pumps, oil pumps and hose reels, plus all necessary connections and accessories. A five minute conference with an Alemite Representative may well give you the key to lower production costs through modern methods of handling and applying lubricants. Write to Alemite, 1840 Diversey Parkway, Chicago 14, Illinois.

Illustrated above is an Alemite Portable Service Station bringing *power* lubrication to a large earth-mover out on the job. Airoperated pumps deliver oil and grease direct from "barrel to bearing."

Important too, is the fact that this modern Alemite Method cuts "time-out" for lubrication as much as 35.3%—which adds up to more pay yardage from each piece of equipment on the job. The result is lower contract costs.

It's just one of many Alemite Methods now saving time, money and machines in every industry. And the Alemite Representative can quickly prove that his simplification of lubrication procedures can definitely reduce the cost of maintenance in any construction company. He can show you case after case where a time study analysis proved that Alemite Methods eliminate costly, time-consuming handling of greases and oils. His methods completely mechanize lubrication from "barrel to bearing"... save grease... keep dirt and moisture out of lubricants... reduce bearing failures.

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o supply an ever-growing demand for paving aggregates, ready-mixed concrete, concrete blocks, precast joists and a wide variety of special concrete products, Maule Industries, Inc. built one of the South's outstanding aggregate producing plants. All of the secondary crushing is handled by two Cedarapids hammermills which reduce oversize oölitic limestone to the desired fine sizes.

Cedarapids hammermills will produce either crushed aggregates of various sizes, dust and agstone or a percentage of both, depending upon the setting of the grates. They will produce not only a much finer quality and uniform size of material, but size-for-size will turn out more tons per hour than other similar types of pulverizing equipment.

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The Parmanco Horizontal is adapted to all forms of highwall drilling, will handle a six-inch auger up to a distance of sixty feet or more and, by use of our patented augers with interrupted flights and secondary cutters, will drill an absolutely clean hole with a minimum of torque. It permits the drilling of a controlled-angle hole which makes possible a great saving of explosives through the cantilever effect of this controlled-angle drilled hole.

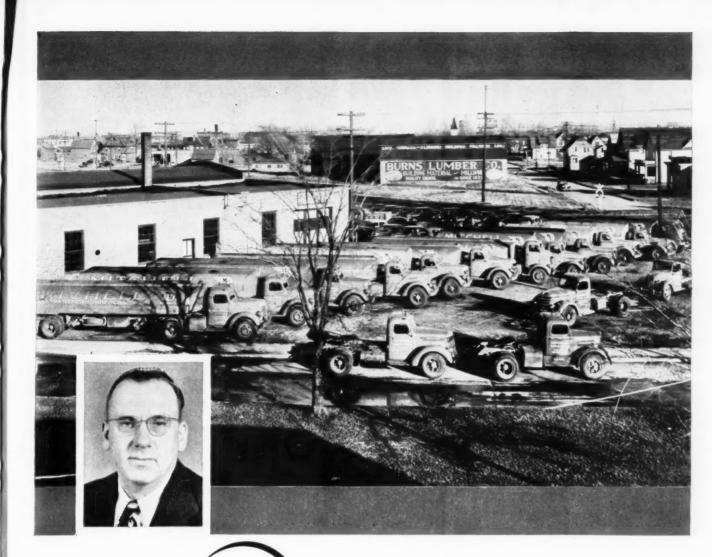
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WATER - RESISTANT ADHESIVE, (Armstrong F-1402) for installing metal and plastic wall tile over plaster, plywood, wallboard, concrete and other bases, has low shrinkage factor which helps prevent face of metal and plastic tile from becoming concave. Advantages claimed: (1) Water resistant; (2) will not bleed through joints or permit tiles to loosen after installation; (3) bond strength increases with higher temperatures; (4) will not bleed to adjacent surfaces or be absorbed into plaster or composition wall; (5) will adhere to thoroughly hardened oilpainted surfaces; (6) lightweight, weighing 12 lb. per gallon. One gallon will cover 50 sq. ft. of wall surface. Available in 5-, 31/2- and 1-gal. cans.-Armstrong Cork Co., Lancaster, Pa.

portable precision supersonic depth recorder is useful for channel dredging, survey and salvage operation. It measures automatically and accurately the depth of water beneath a vessel, recording depths in continuous profile as the vessel proceeds over its course. It also reveals the nature of sea bottom materials.—Bludworth Marine, 92 Gold St., New York 7, N. Y.





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The Mitchell Transport Service fleet of Duluth, Minnesota, is one of the largest of its kind in the Northwest. In 1947, it traveled over a million miles, hauled 43 million gallons of petroleum products.

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Last year a shift to Stanolube HD Motor Oil started this heavy-duty fleet on the road to big savings. L. H. Mitchell, the owner, reports that repair costs have been reduced 10% since the change-over to Stanolube HD.

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Free rings. An inhibitor in Stanolube HD retards oil oxidation—a principal cause of varnish formation and ring sticking.

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SHOVEL YARDAGE ESTIMATOR

—Cardboard device in slide rule form facilitates quick determination of estimated yardage per hr. for various sizes of dragline and shovel digging in materials under different conditions. Estimating device is 9 in. long and 3¾ in. wide. Figures are general estimate only and should not be considered as guaranteed outputs for figuring and bidding jobs. Tables and data are given to make necessary corrections and conversions for different sizes of machines and varied digging conditions.—Thew Shovel Co., 1404 Terminal Tower, Cleveland, Ohio.



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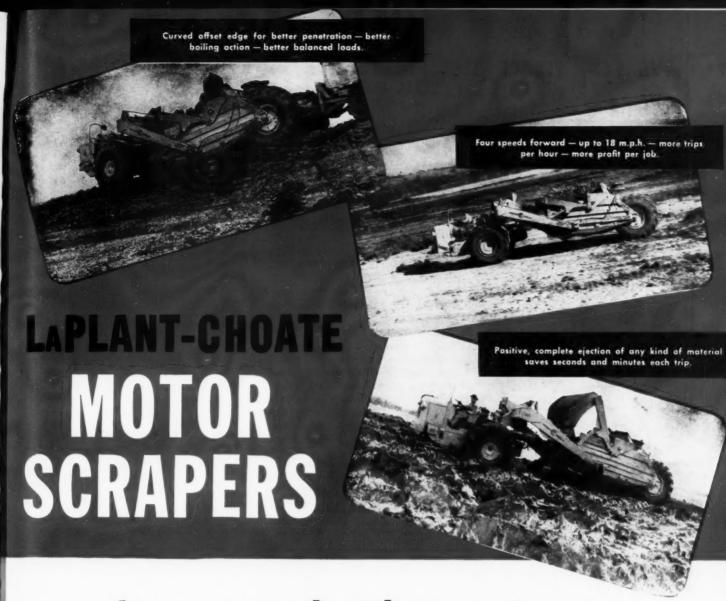
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Simplicity of controls means easy operation. Double-acting hydraulic steering assures safe, positive steering with 60° turns each way without danger of jackknifing.

Improved, air-actuated LPC power control unit operates scraper with peak efficiency. Sixteen horsepower per struck yard of capac-

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FOR LOWEST POSSIBLE COST PER YARD..PER JOB..PER YEAR



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range of lettering template styles is available.-Varigraph Co., Inc., Lin-

coln 3. Neb.

Write for data Bulletin 48.

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works perfectly. Low slump gives concrete economy. Excellent trowelling

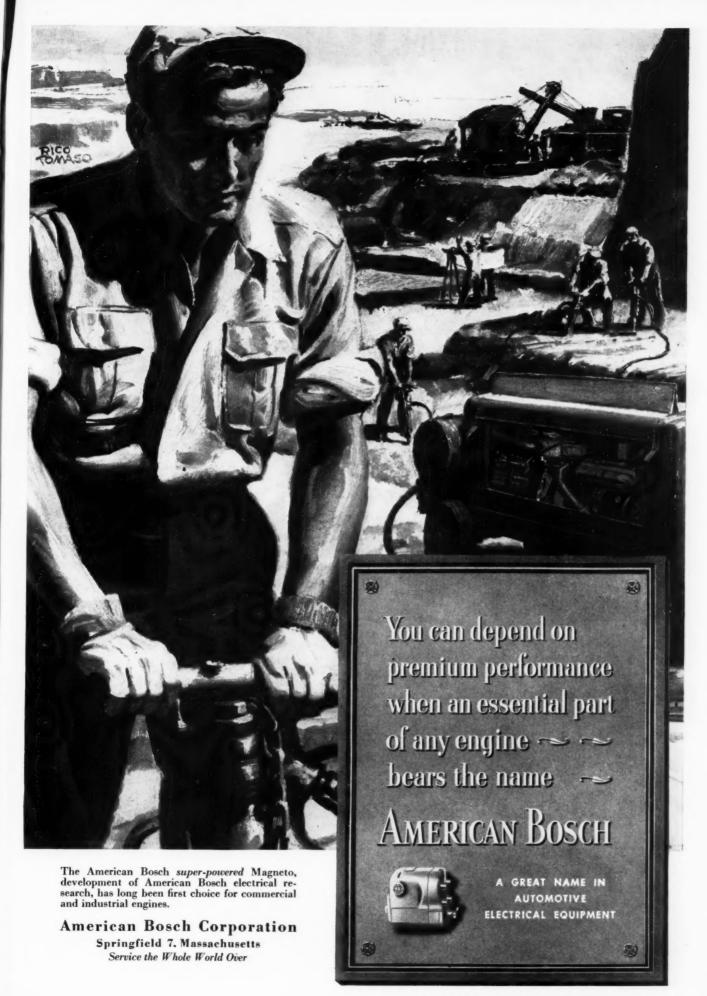
finish assures you little or no touch-up.



ELECTRIC DRILL KIT-This convenient drill kit has a place for everything beginning with a Mall Drill complete and ready for operation. It has eight drill bits of different sizes and a sturdy, compact carrying case. Rack for drills is hinged so that it may be pulled forward to remove drills and pushed back into place. Drills cannot fall out.—Mall Tool Co., 7740 South Chicago Ave., Chicago 19, Ill.



CHAIN SAW-Lightweight, oneman unit has 18-in, cutting capacity and is powered by 31/2-hp. air-cooled Mercury gasoline engine. Has builtin automatic chain lubricator operating under pressure. Fuel system permits operation at top efficiency even when saw is used upside down. Starting is made easy by selfrewinding Magnapull starter which is built into engine. Control is concentrated in pistol grip handle. Throttle is at operator's finger tip with fuel mixture control lever nearby. Priming valve is provided for easy starting in extreme cold.-Henry Disston & Sons, Inc., Phila-



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THE PERFECTION STEEL BODY CO.

Galion, Ohio, U.S.A.



New gloves of medium weight are chrome-tanned cowhide with a one-piece leather back employing a wing-type thumb construction and fabric-lined cuff. Wing-type thumb allows maximum thumb action without binding or pulling across palm. Exposed seams across back of glove have been eliminated to increase the "work-life" of glove. Suitable for use in either oxyacetylene or electric arc welding.—Air Reduction Sales Co., 60 East 42 St., New York 17, N. Y.



DIESEL TRACTOR-New D8 tracktype unit of 130 drawbar horsepower features five-speed constant-mesh transmission and three reverse speeds. Recommended for bulldozing, scraper loading and hauling. Separate gear-type oil pump, providing pressure lubrication for bearings and an oil spray over the gear, is provided for the new transmission. Powerful lightweight master clutch with large diameter brake reduces inertia for faster shifting. New drum-type front idler strengthens the rim. Forward travel speeds range from 1.7 to 4.8 mph. and reverse speeds from 2.2 to 3.7 mph. Engine is four-cycle, water-cooled, six-cylinder diesel unit. Overall length is 15 ft. 3 in. Gage, center to center tracks, is 78 in. Starting is done with independent two-cylinder vertical gasoline engine.—Caterpillar Tractor Co., Peoria, III.

DITCH DIGGER - Production has been started on a ditch-digging machine designed primarily for digging trenches for small building foundations, shallow pipe lines and for drainage. The trencher derives its power from either a Ferguson tractor or jeep and in recent tests dug 166 ft. of trench 16 in. wide and 18 in. deep in 11/2 hr. Ten turns were made and the time included setting up and tearing down the machine. The machine has been tested in all types of soil with uniform success. Present units dig to 30 in. in depth and are adjustable from 12 to 18 in. wide. Earth from the endless chain of 14 scoops is dumped well back from the trench by a worm conveyor .- W. W. Everett, 311 E. Broadway, Phoenix, Ariz.

POU Big Service Extras

-when you buy a A
GM "71" Diesel Engine

Installation Inspection:

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The GM Diesel representative inspects and checks the engine without cost to the owner; whenever possible this is done before the engine is put to work. He explains how to successfully operate the engine and the "preventive maintenance" necessary for best results in days to come.

2. Performance Inspection:

From thirty to sixty days after the engine has begun its job, another inspection is provided without charge. The GM Diesel representative makes any adjustments that may be required and tunes up the engine to its best performance.

3. Owner's Service Policy:

Besides the above inspections, GM Diesel owners are protected by an exceptional warranty outlined in the owner's service policy.

WE WANT every purchaser or prospective purchaser of one of our engines to know how his local distributor and dealer, with their factory-trained servicemen, stand back of the product. They in turn are backed by the knowledge that Detroit Diesel supports them strongly

in their adherence to this policy.





DIESEL POWER

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES . . Up to 200 H.P.

DETROIT 28, MICHIGAN

MULTIPLE UNITS . . Up to 800 H.P.

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

MAXIMUM PROTECTION MINIMUM COST SISALKRAFT Reinforced with thousands of steel-like Sisal fibres

SISALKRAFT used for curing and protection of concrete floors of multi-story building

CLEAN and DUST-FREE FLOORS AT REDUCED COST!

SISALKRAFT is so strong it furnishes positive protection from debris and construction stains, and prevents marring. It also affords dependable frost-protection. It is so light-weight, it can be rolled into place easily and be removed quickly. Economical . . . can be used many times over.

The SISALKRAFT Method of curing and protection is used not only on buildings of concrete construction, but also, in a big way, on concrete highways. This modern method is automatic . . . no watching, no sprinkling, no other covering. The SISALKRAFT Method is a "natural" for you on single-story and multi-story jobs . . . also for driveways, sidewalks and roads. For complete data write Dept. CM.

PROMPT DELIVERY!



The SISALKRAFT Co., 205 WEST WACKER DRIVE, CHICAGO 6, ILL.

Manufacturers of . . . SISALKRAFT . SISALATION . COPPER ARMORED SISALKRAFT . FIBREEN . SISALTAPE

SEWER DESIGN SLIDE RULE-For the solution of sewer design problems this sewer design slide rule is of real value. It has a wide range, is of handy size, and simple and quick to operate. The device is based on the Chezy formula ad and applies to circular sewers only.— Irving Goldfein, 3052 N. 49th St., Milwaukee 10, Wis.

CRUSHING AND SCREENING PLANT-A new portable crushing and screening plant in which the crushing is handled by a cone crusher has just been announced. It is used for secondary crushing of rock or gravel where the material being fed is fairly uniform in size and requires a reduction of only one or two sizes, and where fines are not particularly desired. It is frequently used in a unitized plant set-up where the primary crushing is handled by a portable primary or a scalping unit. This new plant consists of a 22-in. Symons pedestal-type cone crusher, 42 in. x 10 ft. double-deck horizontal vibrating screen, and the necessary conveyors, chutes, drives, and hoppers. The truck is offered with a choice of steel wheels or pneumatic tires.—Iowa Mfg. Co., Cedar Rapids, Iowa.

How to • estimate • plan · construct BRICK MASONRY



This practical manual provides a wealth of dependable information on the efficient, economical use of masonry materials. It covers all types of masonry work . . . gives you complete data on manufacture, properties, comparative advantages, etc., of materials to aid in wise special cation and manufacture. All forms of construction—walls, floors, arches and special forms—are explained in detail.

Handbook of Brick Masonry Construction

By JOHN A. MULLIGAN 526 pages, 163 illustrations, \$5.50

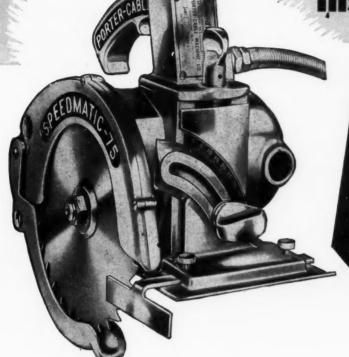
You're given methods and tables on material and labor requirements—tests and performance analyses of brick work — practical "on-the-job" help to speed-up your estimating and construction work. NoW you can substitute scientific data for "rule-of-thumb" procedure in construction work.

- Contains drawings of bonds, with bonds laid out at salient corners Cost items taken from job records performed under contract by the author

 Labor and materials estimating tables based on multiples of 100 or 100 or orekoning may be made decimally.

BOOK OF BRICK MASONRY CONSTRUCTION for 10 days' examination on approval. In 10 days I will remit \$5.50. plus a	See it 10 days FREE	
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Needs ONLY ONE HAND
Instead of TWO!



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Does the work of an EXTRA CARPENTER!



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Porter-Cable Radial Arm, firmly anchored to stand, increases Speedmatic utility.

• FOR GREATER UTILITY, just attach the SPEEDMATIC to a Porter-Cable Radial Arm. This rig has all the advantages of a parallel swing, mitre and rip saw. Permits angles, compound angles and other precise work on identically cut pieces. And you can always see the guide line. Ask any 10 carpenters and 8 will tell you there's no saw like Speedmatic. It's light! Fast! Easy on the hand! You don't have to grab the SPEEDMATIC with two hands . . . and then wish you had another to hold the wood. Not SPEEDMATIC! It practically runs itself . . . straight to the line.







AT ANY ANGLE, the SPEEDMATIC is always perfectly balanced because the handle is above the center of gravity. In any working position it's easy to guide.

With SPEEDMATIC, there's absolutely no "power reaction" on your wrist or arm. Helical gear drive accounts for that. And at the same time it delivers 11% more power to the saw blade.

SPEEDMATIC'S broad shoe permits steady rest. Prevents cramping. One hand holds it straight and true.

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Puts More Speed—More Skill In Any Man's Hand!

Buy it today at your nearest hardware or supply house.

Or write direct for full details and varied uses.

PORTER-CABLE MACHINE CO., 1920-8 N. SALINA ST., SYRACUSE 8, N.Y.



THEN get complete details from your International Dealer or Branch about these three features of Internationals:

The right model to do your work best—right in size, type and power. You'll find it in the *complete* International Line.

International Truck Specialization—engines, transmissions, axles and all other components coordinated to the work each is to do, and balanced with one another. That's fitting the truck to the job.

International Load Coordination—a scientific system for providing accurate weight ratings for *your* jobs, by means of the International Truck Point Rating System. That means payload assignments that give you lowest operating costs.

By the three points above, you can prove to yourself how International Trucks can do more for you.

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
Chicago



Tune in James Melton on "Harvest of Stars." CBS Wednesday Evenings





America's Largest Builder of Material Handling Buckets

SHOVEL **PULL SHOVEL** DRAGLINE CLAMSHELL

FRONTS, BOTTOMS, SCOOPS and TEETH shown in color on buckets are 14% manganese steel developing tensile strength up to 120,000 p.s.i. This high percentage manganese steel gives tough, rugged strength for hard service and allows wide set corner teeth for easy entrance in digging. Volume production methods enable us to build a better bucket with amazing economies in manufacturing.

Experience Counts, See your shovel man or equipment dealer about PMCO Buckets and Dippers.

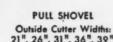
CLAMSHELL

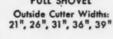
Sizes 36, 1/2, 36, 34, 1 yd.

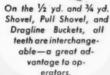


Perforated Sizes ¾ yd. to 2 yds. 20%-40%

lighter than other makes. Solid Sizes ¾ yd. to 2 yds. Mine Stripping Sizes 2 yds. to 9 yds







"Quality Since 1880"

SHOVEL

Sizes % yd. to 18 yds.

CHICAGO 51,

WE OPERATE THE LARGEST AND MOST COMPLETE MANGANESE STEEL FOUNDRY IN THE UNITED STATES





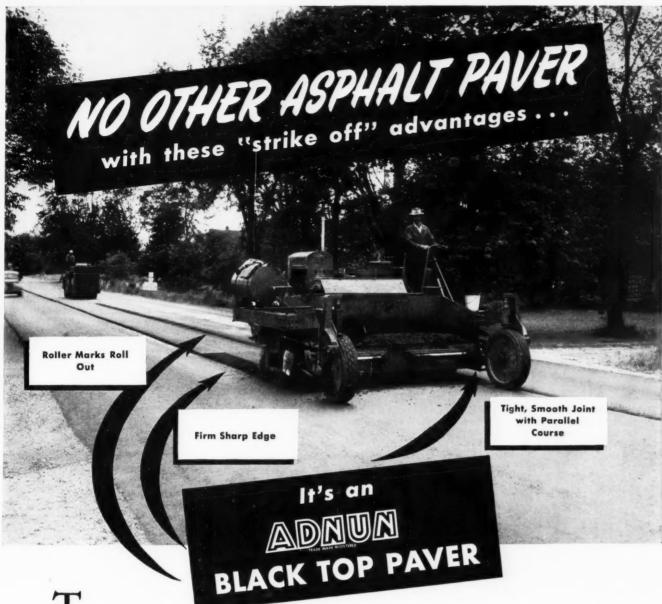


WALKING DRAGLINE - Designed for big yardages, machine swings 8-10-cu. yd. bucket from 200-165ft. boom. Powered by heavy-duty diesel engine, machine can move material 407 ft. without throwing bucket. Hoisting and lowering are through air-operated clutches and brakes; swing machinery is under Ward-Leonard variable-voltage control. Rolling cam walking action permits walking in any direction to positions most effective for digging. Large area base and shoes and proper weight distribution make possible walking and working on soft ground. Machine is designated as Model 450-W .- Bucyrus-Erie Co., South Milwaukee, Wis.

TILE FASTENER—The Macco Chemical Co., newly formed in Cleveland, Ohio, has started production of a product called Macco Lastic, a plastic substance designed to secure wall and floor tile and also to be used as a base for terrazzo. It is said to be thinner and lighter in weight than most mastics and will not crack. Until a plant is located for the company, the product will be manufactured by The Special Chemicals Co., 1545 E. 18 St., Cleveland, Ohio.



PORTABLE GRAVEL PLANT-Recommended for quick, short job hops where material is required in a hurry. Total weight, less power unit, is 40,900 lb., travel length, 41 ft., and height, 12 ft. 9 in. Plant is equipped with six sets of dual 9x20 pneumatic tires. A 7-ft. hopper equipped with mechanical feeder takes feed at rear end of plant while processed material is delivered from front end. Equipment includes jaw crusher, a 24x16-in. roll crusher and a 3x8-ft. 2½-in. deck vibrating screen and a sand screen. Drive is from power unit on plant or from an optional drive through power take-off on a tractor.-Pioneer Engineering Works, Minneapolis



THE cutter bar method of laying black top has been proved in many miles of all kinds of black top, both hot and cold.

The Adnun cutter bar takes the material from the hopper, crowds it forward and strikes it off in a smooth accurate course.

The special bevel tooth design provides an initial compression. Overlapping action at the ends of the cutter bar carries the material up and compacts it against parallel course or curb, making a tight joint. The whole cutter bar can be raised hydraulically at either or both ends. A quick lift provides for emergencies. Tilt con-

trol makes it possible to ride on the heel of the blade. A fine adjustment cares for banked or wedge courses and a simple control device assures any amount of adjustment for crown.

With the hydraulically controlled end gates, bleeding is easily handled and with cutter blade extensions black top can be laid up to 12 ft.

Here is just another of the many Adnun features that put the Adnun way ahead of competition and assures better black top road.

THE FOOTE COMPANY, INC.

1910 State Street

Nunda, N. Y.

Subsidiary of BLAW-KNOX CO.

Ask about the MultiFoote Concrete Paver for your concrete jobs.

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MULTIFOOTE CONCRETE PAVERS

ADMUN BLACK TOP PAVERS

Kinetic asphalt mixers

See ad on Page 146

WORKING SAFETY

IN CONSTRUCTION



M·S·A SKULLGARDS

Light weight, cool and comfortable to wear, these standard work hats of the construction industry are high-pressure molded of laminated bakelite—tough, resistant to fracture, and with high dielectric strength. Self-ventilated for coolness, Skullgards do not soften or deteriorate from exposure to weather,

perspiration, oil or grease. Bulletin DK-13.



M·S·A EYE PROTECTION

The full range of M.S.A. Protective Goggles guard eyes against job hazards. Spectacle-type goggles, chippers' goggles, welders' goggles and other types are sturdy, easy to wear and provide assured eye protection. Bulletin CE-29A.



Light, flexible and strong; furnished in shoulder-strap type which permits easy raising and lowering of workmen in confined places and through small openings—body pad type for workers on scaffolds, roofs, mountain-sides, etc., and special steel worker's safety belt. Made of high-tensile cotton webbing, with high quality hardware tested to 5,000 lbs. Write for details.



M·S·A FIRST AID KITS

Sturdy steel All-Weather cases are equipped with molded gasket excluding dust, dirt and moisture—available in 10, 16, 24 and 36-unit sizes, each containing a complete assortment of unit-packaged first aid materials ready for instant use. Cases are equipped with brackets for wall or vehicle mounting. Descriptive details on request.

M·S·A Clear-Vue DUSTFOE RESPIRATOR

Approved respiratory protection on dusty jobs—light in weight, easy to breathe through, comfortable to wear Formable aluminum facepiece with molded face cushion assures snug fit; transparent plastic filter container shows filter condition at all times; filters are inexpensive, easily replaced. Bulletin CM-7.

M·S·A CHEMOX* OXYGEN BREATHING APPARATUS

Provides oxygen for breathing protection in highly gaseous or oxygen-deficient atmospheres—employing a replaceable chemical canister which generates oxygen as the wearer breathes, for a minimum period of 45 minutes. No high pressure valves or fittings; weighs only 13½ lbs. complete. Bulletin BM-8.

*Trade Mark Registered

M·S·A EXPLOSIMETER

Accurately measures combustible gas hazards at the working place, with easy one-hand operation. Portable and sturdy, any workman can use it without special training. Large, legible dial; uses standard flashlight batteries. Bulletin DN-7.

M·S·A CARBON MONOXIDE INDICATOR

Precisely indicates low, dangerous carbon monoxide concentrations in air of tunnels, tanks, and other confined spaces, safeguarding lives and health of workers. Direct reading meter has scale range from 0 to .15% carbon monoxide in air. Bulletin DS-3.

WRITE FOR FREE BULLETINS AND DEM-ONSTRATIONS ON ABOVE ITEMS

MINE SAFETY APPLIANCES COMPANY

Braddock, Thomas and Meade Streets . Pittsburgh 8, Pa.

District Representatives in Principal Cities
In Canada: MINE SAFETY APPLIANCES COMPANY OF CANADA LIMITED, TORONTO
MONTREAL + VANCOUVER + CALGARY + WINNIPEG + NEW GLASGOW, N. S.



MOBILE CRANE-New 7-ton liftand-carry unit has 3-way positive electric control for pin-point spotting, lifting and placing load. Motive power for unit is a roadster-type Tournapull. Elevator track is adjustable to any angle from horizontal to 14 deg. forward of vertical, so that heavy loads can be picked up and positioned over rear axle for carrying. Electric motors are fed by high capacity generator mounted in line with engine. Positive braking can be had at any height or reach and with any lift. Crane is a oneman-operated machine equipped with finger-tip buttons. Crane will lift rated capacity without use of outriggers or counterweights, and carry loads over smooth or rough surfaces. Large pneumatic tires cushion load. Turning radius of EC-7 Model is 20-ft. area. Forward wheels are steerable and tractive. Crane offers minimum headroom of 8 ft. 9 in., maximum lift of 29 ft. 6 in., and maximum reach behind center line of crane wheels of 31 ft. Travel speed ranges up to 28 mph. -Tournalayer Div. of R. G. Letourneau, Inc., Longview, Tex.



HYDRAULIC - LIFT TAILGATE—

One man can lower or raise pay load to or from ground. Capacity is 1,500 lb. Device, power-operated, weighing only 733 lb. complete with all mounting parts, can be installed on any truck or semi-trailer body. Reduces need for loading docks and hazards involved in manual loading and unloading. Through convenient lever, operator has complete control of load on tailgate and can raise, lower, start or stop at any position between ground- and truck-bed level.—Cemco Industries, Inc., Galion, Ohio

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... low fuel costs?

... minimum maintenance?

...long engine life?

Cummins Diesels have all of these . . .

For example, Nathan Moore, Alhambra, Calif., contractor, currently operating six Cummins-powered Super C Tournapulls on a job at Kernville, Calif., has completed jobs as much as 90 days ahead of schedule with his earth-moving equipment. The Moore fleet of Tournapulls, all powered by Model HBID-600 Cummins Diesels, has run for periods of more than eight months without a single engine overhaul. This contractor also uses Cummins Diesels in one Mack and two Kenworth trucks.



CUMMINS ENGINE COMPANY, INC. . COLUMBUS, INDIANA

Meet The Lightweight TUNNEL CHAMP!



On a pound-for-pound basis ARMCO Tunnel Liner Plates are in a class by themselves. They save you money and speed the job.

These sturdy plates are designed for utmost strength with the least possible weight. One unskilled workman can carry, hold and bolt into place an Armco Liner Section. Only a structural wrench is needed. Labor costs are low and the job goes fast. Less bulk also means less excavation, and storage requirements are smaller. With Armco Plates you buy no excess metal, and this keeps job costs down.

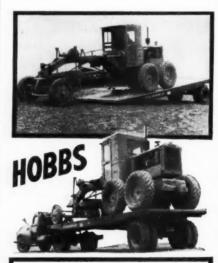
Consider tunneling that next job with the aid of Armco Tunnel Liner Plates. You'll find it the simplest, most inexpensive way you ever saw to install conduits, sewers and similar structures. The hazards and inconvenience of open trenches are avoided and business above ground goes on as usual. Write for prices and complete information on your specific needs. Armco Drainage & Metal Products, Inc., 1965 Curtis Street, Middletown, Ohio.

ARMCO TUNNEL LINER PLATES





FLOODLIGHTS — Two new general purpose floodlights for small area lighting are rated at 300-500 watts and 750-1000 watts respectively. Aluminum reflector insures high beam efficiency. Locking handle on elevation adjustment eliminates need of using wrenches. Lights are provided with portable base as well as slip fitter and pipe clamp mountings.—General Electric Co., Schenectady 5, N. Y.



Self-Loading Floats

GET THE JOB DONE with LESS Labor, Equipment, Time!

Loading and unloading heavy machinery is made easy with the HOBBS Self-Loading Float. Can be lowered into easy grade ramposition with truck winch—loading and unloading then simple as illustrated by top photo (or by using truck winch line with truck backed up to rear of float.) Single and tandem axle models.

WRITE FOR FOLDER "SLF"

HOBBS MANUFACTURING CO.

Dept. M 609 North Main St. Fort Worth, Texas Factory Sales and Service Also in

Houston San Antonio Dallas

Lubbock

RUD-O-MATIC TAGLINE

Provides positive, steady tension — holds buckets steady under all working conditions.

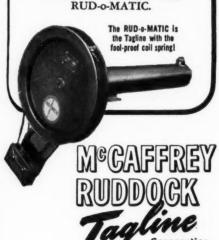


Spring tension holds buckets steady. No weights, pins, tracks, or carriages. Cable saving more than pays for RUD-o-MATIC. Compact—easily installed. Eight models to fit all bucket sizes.

RUD-o-MATIC Taglines are used as standard equipment by most crane manufacturers. Spring tension is powerful enough to hold a clam shell bucket steady. Operates with boom at any angle. Compact—it can be installed in less than thirty minutes. No pins, weights, tracks, or carriages to wear or be replaced. Taglines are complete with fairlead U bolt clamping plates, and cable attached. Immediate delivery—see your equipment dealer—or write—

 Dealers—selected territories in Midwest and Northwest are still open. Write for all details.

RUD-o-MATIC combination Magnet Reel and Tagline . . . operates on spring tension principle with tagline attached to magnet to steady – and electric cable fastened to magnet connections with all slack needed to prevent cable from being pulled or jerked loose from connections. Exclusive with RUD-o-MATIC.



2131 East 25th St., Los Angeles 11, Calif.

UNK-BEUT SPEEDER

K-360 Feeds Steady Stream of Trucks





SPEED-O-MATIC CONTROL

"Speed-O-Matic" hydraulic control permanently eliminates all "lost motion"— actuates clutches faster and more smoothly. Operators will tell you the "Speed-O-Matic" control relieves manual effort and there is little or no fatigue after a good day's work. Get the facts today — find out how you, too, can greatly increase your output.

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MORE SPEED for more profitable operation

Whether the job on the docket calls for excavating—steel erecting or any one of the many phases of materials handling, you'll get the operation done faster, at lower cost, and at greater profit when you invest in a Link-Belt Speeder Shovel-Crane.

Maintenance cost records and daily work charts kept on the job readily prove these facts. Owners and operators, from coast to coast and border to border, attest to the outstanding performance records piled up by Link-Belt Speeder Shovel-Cranes.

Link-Belt Speeder engineering skill results in precision-built machines famous for trouble-free operation and long-life service.

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION.

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Buildors of the Most Complete Lincop
SHOVELS-CRANES-DRAGLINES

Nore...
and more...
Briggs & Stratton
Engines
every day

For several years, despite record production, it has been impossible for us to keep up with the rapidly increasing demand for more and more Briggs & Stratton gasoline engines.

Now, however, more equipment and appliances than ever before are being powered with Briggs & Stratton engines.

Many models are now available for replacement or auxiliary power. See them on display at your nearest Briggs & Stratton Authorized Service Station or dealer.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wis., U. S. A.



DAMPPROOFING COMPOUND-New emulsified mastic compoun

New emulsified mastic compound dampproofs exterior concrete and masonry surfaces below grade. Product called "Hydrocide 700" is specially designed for application to damp surfaces to which it will adhere firmly. Produces elastic, membrane-like coating resistant to penetration of moisture from soil. It contains specially refined asphalt reinforced with long-fibered asbestos. Coverage is 100 sq. ft. per 4-5 gal., depending on character of surface. Requires no heating or thinning.—

L. Sonneborn Sons, Inc., 88 Lexington Ave., New York 16, N. Y.



CORRUGATED ALUMINUM ROOF-

ING-For use as roofing and siding on industrial buildings on every type new 0.032-in. thick corrugated aluminum sheet weighs only 56 lb. per square (100 sq. ft.). Corrugation depth is % in. and pitch is 2.666 in. Deep corrugations strengthen sheet and provide sufficient rigidity for application directly over purlins. Maximum safe recommended loads in pounds per sq. ft. range from 35 for 72-in. span to 106 for 42-in. span. Several sheet sizes are available. For use as siding the material comes in a single width of 3334 in., and in lengths ranging from 5 to 12 ft. in multiples of 1 ft. For use as roofing sheets are supplied in a single width of 35 in. and in the same range of lengths as the siding, (5-12 ft.). Accessories for use with this aluminum roofing and siding include purlin straps, closure strips, rivets, sealing washers, aluminum nails, bolts and screws. Advantages claimed for the aluminum roofing and siding are immunity to rust, rot, and mildew, high strength and long life and resistance to chemical fumes. Aluminum sheets reflect as high as 95 percent of sun's radiant heat .- Reynolds Metals Co., 2500 S. Third St., Louisville, Kv.

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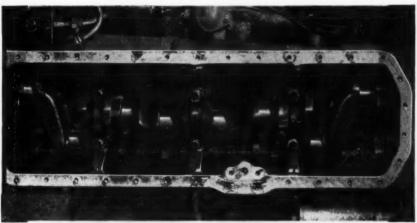
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St.,



UNIT High Compression Bus Engine
LUBRICANT RPM Heavy Duty
MILES RUN 90,371
Highway OperationCONDITIONS Below freezing to desert heat
FIRM Moyers Stages
LOCATION Freezing, Calif.

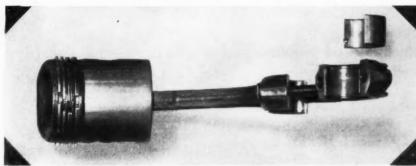
GASOLINE BUS ENGINE RUNS 90,371 MILES IN CLIMATIC EXTREMES WITHOUT SLUDGE OR CARBON TROUBLE



This bus engine was torn down after operating in regular highway service for 90,371 miles on RPM Heavy Duty Motor Oil ... average speed, 50 M.P.H. with many starts and stops. Inland valley weather conditions - below freezing in winter to more than 100° F. above zero in the shade in summer. As the photograph shows, the inside of the engine was exceptionally clean. RPM Heavy Duty Motor Oil's special detergent compounding keeps all engine parts cleaner.



The oil-pump screen was clear and no deposits had accumulated in the crankcase pan. With RPM Heavy Duty Motor Oil, any lacquer, carbon, sludge or other foreign matter is dispersed in the oil and flows out when the crankcase is drained.



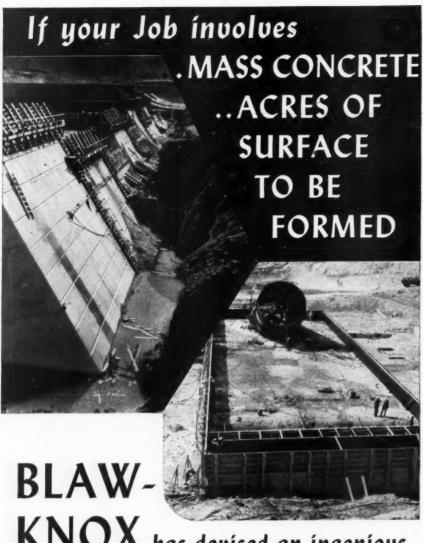
All rings were free and bearings in good condition as indicated by this piston and connecting rod from the engine. RPM Heavy Duty Motor Oil loosens and removes lacquer and carbon from around rings -- keeps oil return holes open and deposits from building up in grooves. It is not corrosive to any bearing metal.

REMARKS: RPM Heavy Duty Motor Oil SAE 30 was in this engine from the time the engine was new and first put in service. The crankcase was drained at regular intervals. Special compounds in RPM Heavy Duty Motor Oil give it the ability to keep engines clean, adhere to both hot and cold spots in engines, resist oxidation, prevent corrosion and foaming.

STANDARD TECHNICAL SERVICE conducted and reported this test: If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20.

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KNOX has devised an ingenious STEEL FORMING method for you

Blaw-Knox has proved the practicability of its forming method for pouring concrete monoliths of gravity type dams—a design of steel form which is easily handled through successive lifts—and which can easily be aligned for all job conditions.

It would be our pleasure to tell you about this tried and proved system of BLAW-KNOX STEEL FORMS for concrete monoliths. You will incur no obligation by asking for this information.



Blaw-Knox STEEL FORMS have been serving engineers and contractors for over 40 years. The Blaw-Knox record of accomplishment is shown in Cata'og 1836. Send for a copy.

BLAW-KNOX DIVISION of Blaw-Knox Company

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SINGLE-STAGE CENTRIFUGAL PUMPS-For the first time, De Laval single-stage pumps have been included in a comprehensive catalog presenting outstanding features of design and construction, listing pump ratings and incorporating essential dimensions. With this catalog, engineers can select the required pump, estimate motor size and plan approximate installation dimensions. In replacing several separate leaflets, the one catalog now contains information for all G, I, K, L, M and P single-stage, single and double suction pumps. Catalog also gives brief descriptions of such optional features as mechanical shaft seals, self-priming system and vertical mountings.-De Laval Steam Turbine Co., Trenton 2, N. J.

masonry cutting saw is designed for fast and accurate cutting of all types of masonry and ceramic materials. It cuts either wet or dry. A 1½-hp. inclosed, ball-bearing motor supplies adequate power. Either abrasive masonry cutting blades or diamond blades can be used. This model has a self-priming centrifugal pump with a self-contained water system. —Champion Mfg. Co., 2028 Washington Ave., St. Louis 3, Mo.





in only 8 feet of width Special construction affords an unusually low bed.

Trailer embodies characteristic features of Rogers proven design.







OSGOOD Air Control FOR Safe, Easy Operation

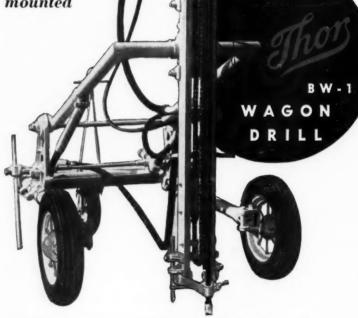
POWER SHOVELS . CRANES . DRAGLINES . CLAMSHELLS . BACKHOES . PILE DRIVERS

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MARION DIESEL, GASOLINE OR ELECTRIC POWERED . % TO 21/2 CU. YD. . CRAWLERS & MOBILCRANES cclaimed BY THOUSANDS AT THE ROAD SHOW

> For POWER unequalled in hard rock drilling . . .

For new versatility in the applications of wagon mounted drilling . . .



For full details about the rugged, powerful new Thor "105" drifter that is mounted on this rig. about the many new features in Thor's design of wagon drill applications, contact your Thor distributor.

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THE NEW



- PNEUMATIC TOOLS
- UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS MINING AND CONTRACTORS TOOLS

HEAVY DUTY TRUCK—New model in line of 4- and 6-wheel drive trucks is rated at 33,000 lb. gross vehicle weight. Model ZU has allsteel cab to provide 30 percent greater visibility and increased driver comfort. Frame is 10x3x11/32-in. heat treated channel steel with welded and reinforced front crossmember for strength. Front and rear axles feature 17-in. spiral bevel ring gears and pinions for strength and quiet. Truck has constant-mesh transmission with helical gears and easy sliding jaw clutches for easy shifting and quiet operation. Engine develops 188 hp. at 2,600 rpm. governed speed and 460 ft.-lb. of torque at 1,000 rpm. It is recommended by maker for highway maintenance and heavy-duty snow removal and for construction haulage.-Four Wheel Drive Auto Co., Clintonville, Wis.

AIR MOTORS-Made in two sizes, as starters for internal combustion engines, small, compact air motor is keyed or splined to starting mechanism. Engine is cranked in same manner as automobile engine and is turned over by electric starter. Motors develop 9 and 20 hp. at 90 psi. air pressure. Overall lengths are 13 3/16 in. and 141/2 in.-Ingersoll-Rand Co., Phillipsburg, N. J.



All the electric power you need - away from the high-line! That's the advantage of using a Fairbanks-Morse generating plant! And there's a unit that suits your needs to the last watt ... from 350 to 35,000 watts ... A.C. or D.C. . . . automatic, remote or manual start. For use where utilities power is not available, and as standby units to guard against power failure. Write Fairbanks, Morse & Co., Chicago 5, Illinois for Folder ADB-400.

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BISSEL LOCOMOTIVES . BISSEL ENGINES . STOKERS . SCALES . MOTOES . GENERATORS . SUMPS . BAILROAD MOTOE CARS and STAMPERS . EASH EQUIPMENT . MAGNETOS



With a new complete line of Contractors' Pumps, Gorman-Rupp has topped their own past high record of performance with a better pump -

- -- QUICKEST PRIMING
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Compare them for priming speed:

The new Model 15M (3") primes at 25 ft. suction lift in 61 seconds.

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No ports, no valves, no clean-out plates, nothing to cause stoppages.

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MANSFIELD, OHIO





BERM LEVELER—Attachable to standard Huber maintainer for operation along hard-surfaced roads. Hydraulic controls operate blade of maintainer to angle and depth necessary to carry material to pavement edge. Apron, or gathering blade, is bolted to maintainer moldboard. This carries excess material picked up in cutting berm and deposits it in rough or low spots along road edge. Berm leveler, mounted on rear of maintainer, is adjusted by hydraulic control to desired pressure. Road cleaner blade is mounted on rear of leveler attachment to remove small stones and dirt left by berm blade .-Huber Mfg. Co., Marion, Ohio.



TRACTION DYNAMOMETER Traction dynamometer capable of weighing up to 651/2 tons has been developed. Recording is the result of weight on a set of elliptically-shaped steel springs. From lug welded on to the springs, a plunger operates an indicating mechanism consisting of a pulley-and-cable device which in turn registers on an outer dial. Shackles are provided at each end to accommodate a safety bar which takes over when maximum loading is reached. Dynamometer was invented by D. W. Keef, former chief test engineer, Willamette Iron & Steel Corp. It is manufactured to two smaller sizes, one to handle lifts of 15,000 lb., and the other 15 tons.-Pacific Engineering Co., Portland, Ore.



NOW on EASY CREDIT TERMS DISSTON HEAVY-DUTY TWO-MAN



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DISSTON Steel, reversible end for end
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Built-in Magnapull starter; no ropes to wind or lose.

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No. I With Leading Manufacturers

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

RUBBER PIPE JOINT (leaflet) Tylox rubber joint is cast into bell of pipe by manufacturer, thus becoming integral part of the pipe. Applicable to small diameters and up to large-bore reinforced concrete pipe sewers—Hamilton Kent Mfg. Co., Kent, Ohio.

METAL TRIMS—This is a 5-color, 68-p. reference book and catalog on metal trims and their uses. It shows more than 650 shapes and sizes of Chromedge metal trims and includes scores of detailed drawings with installation instructions and suggestions for decorative trim applications for single rooms or entire buildings.

—The B & T Metals Co., Columbus, Thio.

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CUT LABOR COSTS!

One MAN riding a MIGHTY MIDG-ET breaks 100 linear feet per hour of 18" wide trench opening in 6" concrete pavement and cuts a beautifully straight line. MIDGET is supplied with air from 105 C.F.M. compressor. Write for complete information and your dealer's name.

R.P.B. CORPORATION
2751 EAST 11th STREET - LOS ANGELES, CALIFORNIA



He's Fussy about Rope Lubrication

The Bethlehem wire-rope man has an eagle eye. He can spot a "dry" rope a mile away . . . although he doesn't like to find one, for hard-working wire rope should never be allowed to operate dry—unlubricated—for any length of time.

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This is a fundamental too often overlooked. Frequently Bethlehem engineers encounter ropes so dry that serious harm has already resulted. Sometimes—strange as it seems—the user doesn't realize how *vital* lubrication really is. Sometimes he's merely forgotten—or meant to take the proper steps but got too busy.

For best results and longest life, wire rope must be lubricated. Why? Because lubrication reduces internal friction—the friction of wire against wire. Because it reduces

the friction of rope against sheaves, rope against drum. Because—important!—it helps prevent destructive rust from getting a start.

True, in some services, the original factory lubrication provides adequate protection throughout the useful life of the rope. But this is not *always* the case. So, when a Bethlehem man comes to check your ropes, lubrication is one of the first things he'll look into. It's his business to see that you get the correct wire ropes for your job—but he also wants you to *get the most out of them*. Proper lubrication is a long step in this direction.

If you need advice on this or any other wire-rope problem, call for a Bethlehem engineer. He's part of a nationwide network whose services are always available.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Export Distributor: Bethlehem Steel Export Corporation

When you think WIRE ROPE . . . think BETHLEHEM BETHLEHEM STEEL



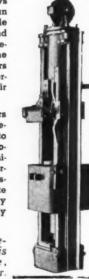


WARRINGTON-VULCAN Single-Acting Steam PILE HAMMERS

e How many powerful blows in a Warrington - Vulcan Single-Acting steam pile hammer? You'd spend years counting them because we've seen some mighty old Vulcan hammers putting out the same powerful blows that whipped their first pile driving job.

Yes, Vulcan pile hammers are rugged at any age because they're built strong to function easily and economically without mechanical interruption. They operate at medium steam pressure to deliver a moderate frequency of low velocity lows from a relatively heavy ram.

Write today for detailed information on this durable, dependable, time-tested pile hammer.

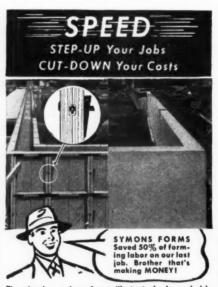




SANDERS—(8-p. pamphlet) Portable electric and portable air-driven sanders for use on wood, metal and composition. Also information on complete sanding kits with illustrations and prices of various accessories.—Sterling Tool Products Co., 1340 No. Milwaukee Ave., Chicago 22, III.

WELDING CURTAIN (4-p. folder) Flame-proof canvas and asbestos cloth curtains are designed to confine welding operations to a given area and to protect other workers and passersby from harmful direct and reflected rays given off by welding operation. Also serve as protecting shields against flying chips and scale when cleaning. Furnished with eyelets across top.—Industrial Products Co., 2715 N. 4th St., Philadelphia 33, Pa.

ALL-STEEL TOOL BOX (4-p. folder) Mounted on rubber-tired wheels for trailing to job at high speed. Equipped with shelves, partitions and safety cover lock.—Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2, Ohio.



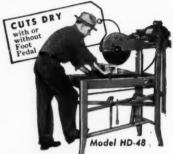
The simple wedge clamp illustrated above holds forms together, as well as the ties between forms. This eliminates the use of nails, spreaders or band irons, and requires the use of only one water. The forms last 50 to 100 reuses without repair. Symons Forms can be rented with purchase option

Symons Forms can be rented with purchase option or you may purchase the hardware with blueprints to make your own forms. WRITE TODAY for our big free booklet which completely describes the Symons forming system and accessories.





You'll be amazed how quickly and easily you can cut virtually any special length or shape from the hardest masonry materials. Clippers save time — save material, assure better workmanship on every job.

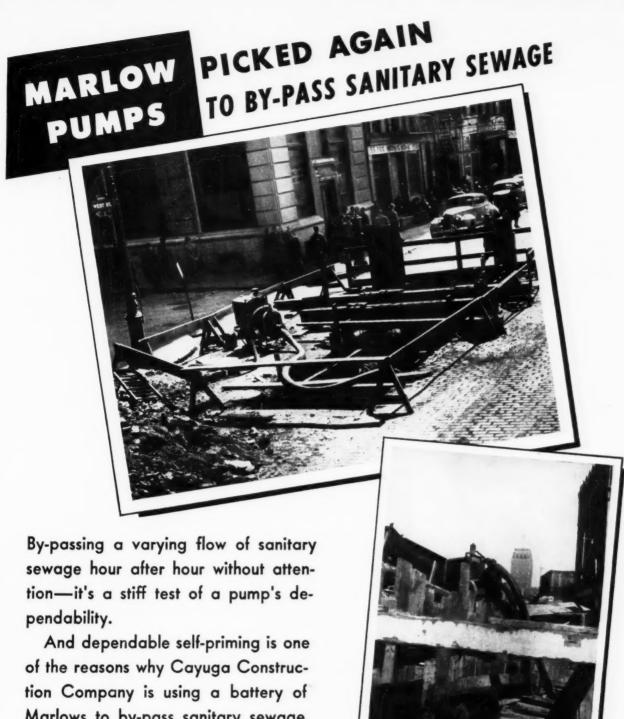


With the exclusive Clipper design, proven throughout the world and guaranteed to provide the fastest cutting speed and the lowest cutting costs.



DUSTLESS MASONRY CUTTING so fast and easy. Just turn on the circulating water system and slice through the hardest masonry materials. Foot Pedal control for varying material sizes or lock the cutting head at a set position, whichever is desired.





Marlows to by-pass sanitary sewage while construction of the West Side Express Highway Extension is under way.

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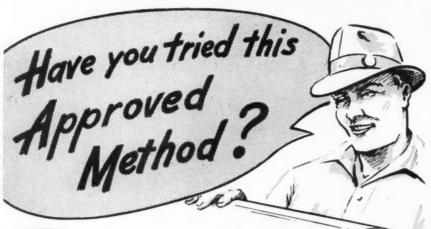
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CONDS

> For more reasons why you see so many Marlow pumps on jobs where dependability can't be compromised, write for Marlow literature.



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Pier and Column Forms

SONOTUBES have long since been tested and approved by architects, engineers and contractors on all manner of jobs requiring concrete piers (up to 10') or column forms (up to 21'). Test pourings have been made on columns up to 30'.

FASTER

No forms to build—simply cut by handsaw to pier or column height, set on footing with minimum bracing to align and pour.

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Lengths up to 24 feet

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8"	9"	10"	111/4"	12"	131/2"
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CUT TO LENGTHS ON THE JOB

Write for delivered prices

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DRAFTING TEMPLATES (4-p. folder) Range of templates includes ellipse set, detailer, radius guide, instrument symbols, architect's aid covering commonly used symbols. Templates made of cellulose nitrate are designed as time-savers for engineers, designers, draftsmen and architects.—Rapidesign, Inc., P. O. Box 592, Glendale, Calif.

VALVE AND CURB BOXES (4-p. folder) Describes new line of valve and curb service boxes made of asbestos-cement pipe with castiron tops and covers. Distinctive features include shock-proof joint to prevent damage to valves and curb stops. Chart indicates proper model to use for various trench depths. — Verako Products Co., P. O. Box 604, Waukegan III.

HEAVY-DUTY DIESEL ENGINE (28-p. booklet). Among subjects discussed are fundamentals of diesel power and its advantages, engine construction, patented combustion chamber and operation of 4-cycle engine, with functional charts and diagrams, fuel injection equipment and governors. Cold engine starting is given attention; also fuel oil and lubrication. Hercules diesel engines have power range from 12 to 400 hp. and piston displacement of 113.1 to 1468 cu. in.—Hercules Motors Corp., Canton, Ohio.

PLASTER AND MORTAR MIXER (4-p. folder) Describes Power Hoe one - bag plaster - mortar mixer mounted on two wheels for fast towing. Handles up to 8 cu. ft. of material on some types of mixes. Blades are arranged to give crisscross intermixing of material in drum. Powered by single cylinder air-cooled engine of 4½ hp.—Jaeger Machine Co., Columbus 16, Ohio.

bulletin) Clutch-type 3½-4-cu. yd. diesel power shovel with electric swing. Twin-six diesel engine is direct-connected to generator which supplies power for compact electric swing unit. Medium-size machine is recommended for use in quarries and stripping. Machine is designated as Model 111-M—Marion Power Shovel Co., Marion, Ohio.

No barefoot pace today!





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use hine M rion, Recently I was telling my wife about flying from Greenville, S. C., to Chattanooga, Tenn., in 67 minutes flat. I recalled how it used to take me two hours, by honest barefoot schedule, to cover the four-mile Cumberland mountain trail between my home at Dechard and school at Sewanee, Tenn.

Today's fast traveling symbolizes the Southeastern states' industrial growth. As you fly in over the Smokies, you see a network of fine concrete highways connecting all parts of our country. No longer is this an area of just cotton, peanuts, sweet potatoes, peaches.

Rich in natural resources, we now have a tremendous number of manufacturing plants—shipping shoes, clothing, dairy products, textiles everywhere—sending the finished products of mines, quarries, forests and farms to all parts of the world.

Little did I dream, as a school boy, that this part of the country would boom industrially, and that I would be instrumental in helping the development, in charge of sales of a vital building material manufactured at Cowan, Tenn., only eight miles from my birthplace.

P. T. CROWNOVER



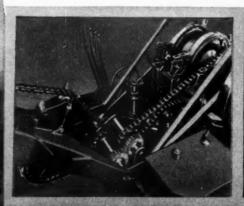


WHY YOU CAN Depend UPON P&H...

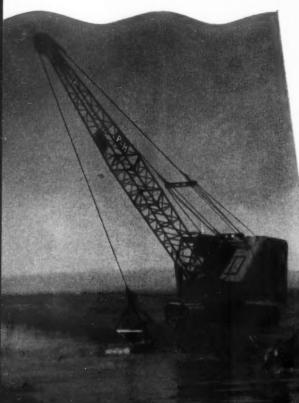
Whether it's digging, or otherwise handling materials -wherever you see a P&H spearheading a job, you can be sure it's being done with all the dependability that can be built into an excavator. Many of the innovations originated by P&H have been revolutionary. Yet every detail of P&H design and construction is based upon proved experience. P&H performance is dependable. This is one of the reasons why more and more users have turned to P&H-why many more will.



POWERFUL CHAIN CROWD— P&H's Planetary Chain Crowd is simple, positive, dependable. It provides full engine power on every bite. P&H's Crowd Chain will outlast from 25 to 30 crowd cables. THE END OF CRAWLER TROUBLIBLE-F
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are proved in millions of miles—the s
service — the most efficient ev used
put on an excavator. They cut tim for r
losses, reduce maintenance costth, ve
provide smoother, more depends, sav
able travel, easier steering.









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R TROUBLIBLE-FREE OPERATING CONrpe crawle—Direct-acting hydraulic conof miles—the same low-pressure prinfficient evused in braking systems for
hey cut tims for more than 25 years. Its
rance costth, velvety action cushions
re depends, saves repair bills. It's more
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FRAMES WITHSTAND MORE PUN-ISHMENT — P&H originated allwelded excavator design — started building them over 15 years ago. With rolled alloy steels used throughout, they're stronger, tougher, more rigid, without bolted joints — without the penalty of useless deadweight. You can be sure your excavator investment will be most profitable when you have all the added values built into P&H Excavators. See your nearest P&H dealer or write us for information.



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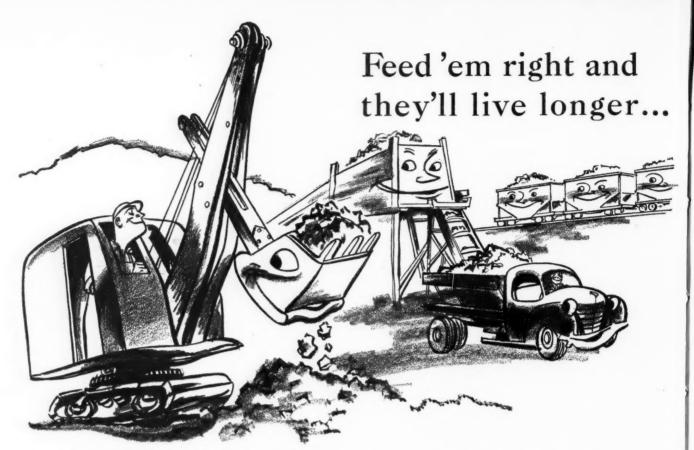
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P&H Excavators are built in sizes from 1/2 to 6 cu. yds. with gasoline, Diesel, or electric power. Ask for bulletins on the size that interests you.



ROCKMASTER Better Breakage

is Better Bucket Food

Breakage, too, is a matter of digestion—for your removal equipment. That's another reason why it pays to use the Rockmaster Blasting System. Rockmaster's better breakage pays off in longer equipment life and speedier handling in quarries, strip pits and mines.

Buckets bite into more evenly broken, smaller rock—and that means less strain on your shovel's powerhouse as well as on the bucket itself. Loaders, mine cars, trucks, all carry heavier loads under lighter strain. Big rocks that require secondary blasting are cut to a minimum. It's full speed ahead after a Rockmaster millisecond delay blast.

Rockmaster is the original millisecond delay blasting system - pioneered by Atlas. No special equipment is needed. For some operators, Rockmaster methods have saved tens of thousands of dollars a year. Your Atlas representative will gladly discuss ways that Rockmaster can be of help to you in your mining, quarrying and construction work. Call him today.

THE GREATER SAFETY OF ATLAS MANASITE DETONATORS Less More Bark Remember, the Atlas Rockmaster Blasting System also incorporates Atlas Manasite. This means decreased sensitivity to impact and friction - no sacrifice in efficiency but less chance of accident. ATLAS

"ROCKMASTER"—Trade Mark Manasite: Reg. U. S. Pat. Off.

EXPLOSIVES "Everything for Blasting"



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INSULATING ROOF TILE (8-p. pamphlet) Deals with Kaylo roof tile, a structural unit having high insulating value designed to carry roof deck loads of 50 lb. per sq. ft. Composed of non-combustible minerals. Specifications, design data and details for engineers and contractors. Technical data include tables on insulating value, strength, weight, dimensional stability and nail-holding power.-American Structural Products Co., Toledo 1, Ohio.

HYDRAULIC CONTROL EQUIP-MENT (4-p. folder). Bulletin 2-B deals with hydraulic pumps, rams and valves. Covers both powerdriven and hand-operated pumps and control valves for single and double-acting rams. Also several types of auxiliary valves.-Blackhawk Mfg. Co., Milwaukee 1, Wis.

PRE-TREATED PAINT BRUSHES (12-p. booklet) Pre-treated paint brushes processed in best linseed oil require no breaking in. When working with water paints, oil processed bristles do not become floppy or sloppy. Bristles have proper setting-vulcanized in rubber.-David Linzer & Sons, Inc., 10-20 Astor Place, New York 3, N. Y.

POWER CRANES (16-p. booklet) Deals with both rubber-tired and crawler-mounted Lorain cranes for industrial material-handling jobs. Illustrations show use of fifteen typical attachments, including buckets, hooks, electric magnets, slings and tongs. Booklet emphasizes mobility of Lorain cranes.-Thew Shovel Co., 1404 Terminal Tower, Cleveland, O.

SKYHOOK (4-p. folder) Aerial transportation device travels on and is supported by two wire rope cables anchored at both ends. Powered by industrial gas engine. Operator rides in Skyhook carriage to control operations. Traction is positive for climbing any grade.—Pointer-Willamette Co., Inc., Portland, Ore.

VIBRATING SCREEN (4-p. folder) Vibrex screen employing two-bearing circle-throw principle has adjustable stroke and easy angle adjustment. Screen is either floor mounted or suspended to size or separate material from 2 in. to 1/8 in. Full range of sizes in single or double deck styles.-Robins Conveyors Div., Hewitt-Robins, Inc., Passaic, N. J.

powco

Scoot-Crete easily "walks away" with a ton or more up a 20% grade. Pivot-point steering for complete control on steep descents or roughest ground. Rugged design for minimum service costs-pays off fast on any construction job.

SCOOT-CRETE*



*TRADE MARK

Your Next Step to Cost-Cutting

Put several Scoot-Cretes to work on your jobs. They eliminate back-breaking wheelbarrow work. They save time, cut costs.

Built to give years of service with a minimum of maintenance. Look at these unmatched features:

STURDY, TRUCK-TYPE AXLE—Plenty of extra strength for handling shock loads. HIGH FLOTATION TIRES-Heavy-duty 7:50"x10" tires have plenty of ground contact area for positive traction in mud or soft dirt.

HEAVY-DUTY, WELDED STEEL FRAME-Will not twist out of shape when handling capacity loads on rough surfaces.

WORM STEERING-Gives operator complete control and freedom from fatigue at all times. No wheel shock, no jack-knifing.

PIVOT-POINT STEERING-Provides high maneuverability on narrow ramps and scaffolding.

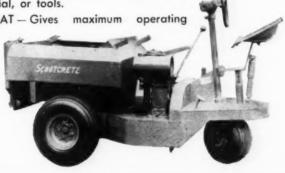
1-TON CAPACITY-Box holds full mixer batch, 14 cu. ft. Scoot-Crete weighs only 1000 lbs. empty.

INTERCHANGEABLE PLATFORM—Change from dump box to platform in just a few minutes. Use platform for hauling bricks, blocks, form material, or tools.

SHOCK-ABSORBER SEAT - Gives maximum operating

6 H.P. AIR-COOLED ENGINE, 4-SPEED TRANSMISSION—Plenty of power to carry 1-ton up 20% incline.

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Manufacturers of Materials Handling Equipment SOUTH HAVEN, MICHIGAN



- ★ Box Type Arch—greater strength
- * Special Hardened Lip-cuts like a spade
- * Perfect Balance—carries load evenly, no spilling
- ★ Light in Weight-modern design and extra strength

FIRST in the Field . . . for over 36 years

DRAKE-WILLIAMS-MOUNT . OMAHA, NEBR.



HOSE FITTINGS—(6-p. pamphlet) Catalog pages cover couplings of several types, hose nipples and a variety of air and gas hose fittings. Featured are recommendations for attaching couplings to hose. There is also a table showing the various couplings recommended for different types of hose and a detailed discussion of coupling threads and their functions. Each fitting is pictured and described, with sizes available listed.—B. F. Goodrich Co., Akron, Ohio.

CHEMICAL PRODUCTS — (16-p. booklet) Classifies Hercules Powder Co.'s chemicals by family groups including cellulose, synthetic resins, rosin, terpene solvents and chemicals, chlorinated products, dairy products, explosives and sporting powders. All of the products listed are briefly described as to chemical makeup, uses and potential applications.—Hercules Powder Co., Wilmington, Del.

INSIDE METAL STORM WINDOW (4-p. folder) Storm window combines with steel casement and screen to form a complete window unit. Made of formed steel bonderized, quickly and easily installed, and fits snugly against steel casement on inside. Reduces heat loss, provides greater comfort in cold weather, and minimizes condensation. Designed for use with Fenestra casements. Rubber gasket attached to storm window frame prevents metal-tometal contact with casement, quickly sealing hole opening.—Detroit Steel Products Co., 3183 Griffin St., Detroit, Mich.

INCINERATORS — An interesting booklet catalogs and describes odorless incinerators of various types for hotels, restaurants, hospitals, schools, industrial establishments, municipalities and residences.—Joseph Goder, 5121 N. Ravenswood Ave., Chicago 40, Ill.

UNDERGROUND PIPE INSULA-TION-(4-p. folder) Describes "Z-Crete", a special mix of insulating concrete designed particularly for the insulation of underground heated piping. Product is composed of specially graded and compounded insulating aggregate, Portland cement and a liquid waterproofing admix. These materials are mixed and placed on the job and cast in place to form a solid covering of waterrepellant insulation. Leaflet describes method of installation.—Universal Zonolite Insulation Co., 135 So. La-Salle St., Chicago 3, Ill.

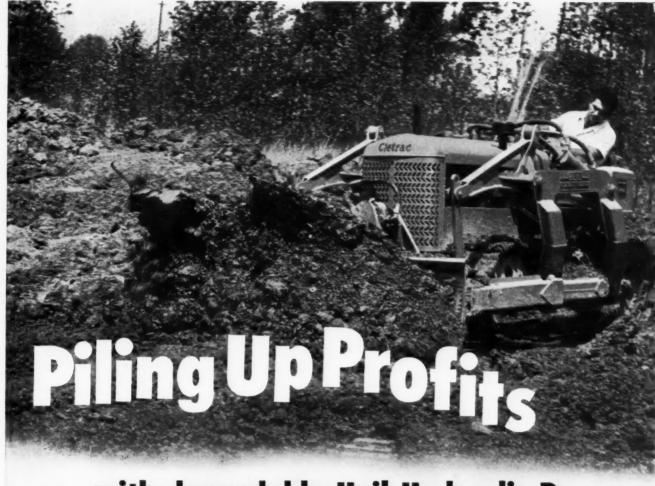
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. . . with dependable Heil Hydraulic Dozers

You're in business to make money — and it's smart business to let Heil Hydraulic Dozers handle your earthmoving jobs. Here are a few reasons why:

- Cleaner cutting action and bigger loadcarrying capacity — scientifically contoured blade puts Heil Dozers way ahead in dirtmoving ability.
- Trouble-free operation and low maintenance costs you never have to replace a piston due to wear. Low hydraulic pressures provide freedom from annoying oil leakage.

● Easy operation and quick response to controls — there is no lag — your operator gets prompt action from finger tip pressure. This lets him dig faster with less effort—and move more dirt.

Get in touch with your nearby Oliver-Cletrac distributor — he can show you how Heil Hydraulic Dozers improve profits. Write us today for latest literature.

THE HEIL CO.

GENERAL OFFICES . MILWAUKEE 1, WISCONSIN

R-95



Oliver is starting its second century of service to the world. The Heil Co. offers its congratulations.

Insurance ... and YOU

#8 of a series of informative articles on insurance and bonding.

Which would you rather loseproperty dollars or income dollars?

If disaster shuts down your operations, you will suffer an income and a property loss. You need protection against both!

Property insurance alone won't protect you against loss of income, but Hartford's Business Interruption Insurance can do just that. If fire, storm, or other hazards insured against, force you to suspend operations, Business Interruption Insurance can protect you against loss of anticipated earnings.

Business Interruption Insurance can give you just what your business itself would have given you if no interruption had occurred.

Here, briefly, is how Business Interruption Insurance protects you:

BUSINESS BALANCE SHEET FOR ONE MONTH

Before Fire							
Sales							\$30,000
Cost of Merchandis	se .			٠			18,000
Gross Profits							\$12,000
Expenses							10,000
Net Profit			٠				\$ 2,000
After Fire _WITH							Non
Cost of Merchandis							
Gross Profit							None

Sales									None
Cost of Merchandise									None
Gross Profit					۰				None
Expenses continuing	du	ring	shu	tdo	wn				\$ 7,000
Net Loss									\$ 7,000
Add. Anticipated Pro	ofit	Pre	vent	ed					2,000
Total Loss								*	\$ 9,000

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(Same as was anticipated had no interruption occurred)

Hartford's Business Interruption Insurance is adaptable to almost any business enterprise; stores, factories, garages, theatres, hotels, etc.

The Hartfords have prepared work sheets to help determine how great a loss you might suffer and how much insurance you will need to safeguard your income. Write for them—there's no obligation!

HARTFORD

HARTFORD FIRE INSURANCE COMPANY
HARTFORD ACCIDENT AND INDEMNITY COMPANY
HARTFORD LIVE STOCK INSURANCE COMPANY



Writing practically all forms of insurance except personal life insurance
Hartford 15, Connecticut

EQUIPMENT MEN

and Their Companies

Current developments among manufacturers relating to expansion of services, shifts in personnel, and other changes, include the following:

SALES-R. V. Bradley is special engine sales representative of the Caterpillar Tractor Co., Peoria, Ill. J. M. Abbey succeeds him in contacting distributors and dealers in Minneapolis, Minn., and central Canada . . . A Mid-Atlantic region, headquarters, Philadelphia, Pa., for the Allis-Chalmers general division field organization has been created under William Arthur, and Frank Freyler succeeds Arthur as Philadelphia district office manager, and he, in turn, is succeeded by W. F. Daly as manager of the Cincinnati office . . . To handle the sale of Yale automotive locks and specialty hardware Al Vos of Kansas City, Mo.. has been appointed manager of the Detroit office of The Yale & Towne Mfg. Co. . The Jaeger Machine Co., Columbus, Ohio, has named John A. (Continued on page 142)

GRIFFIN

WELLPOI NT SYSTEMS

> JETTING PUMPS

Distributors
GRIFFIN
ENGINEERING CORP.
2016 E. Adams St.

JACKSONVILLE, FLA.

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EQUIPMENT CO., INC.
548 Indiana Street
HAMMOND, INDIANA

GRIFFIN WELLPOINT CORP

881 EAST 141st ST. + NEW YORK 54, N. Y Phones: MElrose 5-7704-5-6

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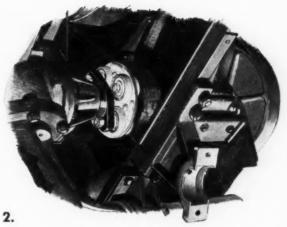
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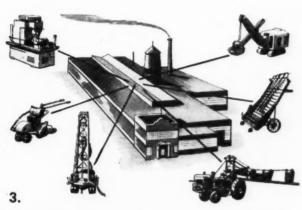
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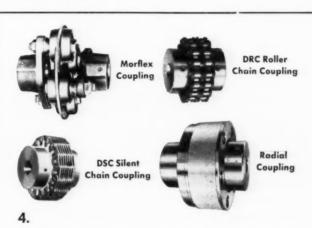
g. Co. olumn A. Wanted: a one-man crew to harvest grain in labor-short areas. Cockshutt Plow Co., Ltd., Brantford, Ont., built such a harvesting combine. But trouble-free operation had to be assured on such vital turning parts as the shaft between transmission and differential. Needed: a flexible coupling to absorb shock and vibration, increase shaft life, yet withstand grit, chaff and moisture. Impossible?...



Cockshutt Plow's unusual coupling need was quickly filled by Morse Morflex Couplings. Shockproof, quiet, compact—they take all the kicks the combine gives, and compensate for misalignment. Other Morse Couplings—Silent and Roller Chain, 'Junior' and Double Morflex, Radial and Marine Morflex—are made to thresh out particular problems in your business. Just...



Look how Morse couplings have been applied to such diversified uses as machine tools, material handling lifts, oil wells, power shovels and conveyors. In your plant or on your consumer product, Morse couplings speed production, eliminate bearing wear, protect equipment and workers. For that extra attractive addition that makes your consumer products sell, investigate Morse Couplings, right now. Perhaps...



You'll get plenty of bright ideas for coupling uses from a set of Morse coupling catalogs. Address: Dept. 197, Morse Chain Co., 7601 Central Ave., Detroit 8, Mich. Or, for on-the-spot engineering advice and aid, write or wire—trained and experienced Morse Sales Engineers will call on you. Ask to see and hear more about the entire line of Morse Mechanical Power Transmission products.



Roller Chain Drives



Morse-Rockford Friction Clutches



Silent Chair

MORSE

MECHANICAL
POWER TRANSMISSION
PRODUCTS





MORSE CHAIN COMPANY . DETROIT 8, MICHIGAN



RENT A THOMAS HOIST

For Your Building Jobs
Direct From the Manufacturer

Since 1873, Thomas-built hoists have been designed for dependable, economical service.

NOW AVAILABLE - IN STOCK

The Thomas patented "Band Friction" grips positively, releases easily—ELIMINATES OPERATOR FATIGUE. The Thomas patented "Back-Up" brake requires no power, sets and releases automatically. QUICKLY INTER-CHANGEABLE PARTS, and PROMPT, DEPENDABLE SERVICE means Thomas Hoists Keep the Job Going. One, two or three drum hoists up to 100 H.P. gasoline or electric powered.

Write NOW for NEW FOLDER No. 101 showing in detail the trips per hour normally obtainable with the various types of Thomas Hoists that are engineered to fit a particular job.



THOMAS HOIST CO. 22 S. HOYNE AVENUE PHONE SEELEY 0303 CHICAGO 12, ILL.



(Continued from page 140)

Schultz manager of southern sales and service at 235-38 American Life Bldg., Birmingham, Ala. . . . John W. Bishop is sales representative for the Marion Power Shovel Co. in southern Indiana, western Kentucky and southeastern Ill. Shaffer & Co., Brazil, Ind., is distributor in that area . . . Fred C. Foy has become vicepresident and manager of sales, central staff of Koppers Co., Inc. . . . F. Kelly Dusenberry is sales manager of Robison Machinery Co., Salt Lake City, Utah . . . Robert B. Parker has been appointed manager of sales, Washington special accounts office, Carnegie-Illinois Steel Corp. succeeding L. R. Knapp, retiring . . Harry R. Powers has been appointed eastern sales manager for R. G. Le-Tourneau, Inc., succeeding E. M. Ferguson, resigned . . . Carl W. Meininger will be in charge of aluminum development and sales for Stacey Brothers Gas Construction Co., Cincinnati, Ohio.

Harry C. Williams is general sales manager of The H. K. Ferguson Co., Cleveland, Ohio . . . C. B. Murphy will be sales representative of Lima-Hamilton Corp. in the Southwest ... M. H. Kirkeby, 437 Oliver St. South, Minneapolis 5, Minn. is sales representative of Alpha Metals, Inc., of Brooklyn, N. Y. in Minnesota and North and South Dakota . . . Northwest Engineering Co. has appointed F. A. Stoughton, 487 McCully St., Pittsburgh 16, Pa., as district sales manager in the Pittsburgh area . . R. R. Schultz has been promoted from assistant to sales manager of the crusher and process machinery divisions of Nordberg Mfg. Co., Milwaukee, Wis. . . . George Harshberger has been made vice-president in charge of sales for the Calresin Corp., Culver City, Calif. . . . Howard Mareton, sales and service engineer at the Boston, Mass., branch of Minneapolis-Honeywell Regulator Co. is now industrial manager of the Brown division at Minneapolis and St. Paul, Minn. . . . Kenneth H. Cudigan is vice-president in charge of sales for the Gorman Rupp Co., Mansfield, Ohio. . . . Richard N. Jones is vice-president in charge of sales for the Lustron Corp.

Wilson C. Blake Co., 190 Beacon St., Hartford, Conn., is distributor of Dravo "Counterflo" heaters in Connecticut and Western Massachusetts . . . T. Southworth Tractor & Machinery Co., Inc., Menands, N. Y. is distributor for Humdinger pumps for Ralph B. Carter Co. in several counties in Northeastern New York and in Bennington County, Vt. . . . Nevada Equipment Service. Inc., Reno, Nev., is appointed Bucyrus-Erie distributor in parts of Nevada and California . . . Earle Equipment Co., De-

(Continued on page 144)

"Prove it, mister!"

Hard-hitting facts for truckers who like it straight from the shoulder



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COURTESY THE BETTMANN ARCHIVE

EXACTLY what is there about Reo trucks that makes fleet owners, operators, drivers and mechanics go to bat for them at the buzz of a starter?

Is it Reo More-Load design? This exclusive Reo feature cuts inches off the wheelbase—gives a full payload in a more compact unit.

Perhaps it's the ease of maneuverability of a More-Load design Reo truck that makes users swell with pride—and profits.

Then again, Reo drivers might be chesty just from the sheer pleasure of handling a responsive, easy-to-steer Reo truck. Reo's close, tight, turning radius is made to order for tough city driving and any kind of highway hauling.

Better consider the twinkle in the mechanic's eye. Likely it's a gleam of goodwill toward Reo for making his service and maintenance job easier. Remember Reo's exclusive cowlhinged hood? That feature makes the Reo Gold Crown Engine more accessible. It's easier to get to and work on.

The pride of possession Reo owners show could well come from any of Reo's superior features. For instance, look at Reo's tough, chrome-molybdenum iron block, dual-primary brakes, Tocco (electric) hardened crankshaft, 7 main bearings, and extra-gauge steel rail frame.

These extra-quality features are all yours in Reo trucks. It means you pay less because you get more value.

REO MOTORS, INC., LANSING 20, MICH.

Sharp-eyed, hard-fisted truck men want proof!

Reo offers you undeniable, incontestable proof. Signed and sealed by State Authorized Notary Publics.



Notarized Proof! Drivers who won all first and second place awards drove Reo trucks in the American Trucking Associations' National Truck Roadeo. And 22 State Roadeo winners also won with Reo trucks.



Notarized Proof! A medium-duty Reo hauled 10,000 lbs. of furniture from New York City to Los Angeles in 93 hours to set a transcontinental record. Trip was timed by American Trucking Associations officials.



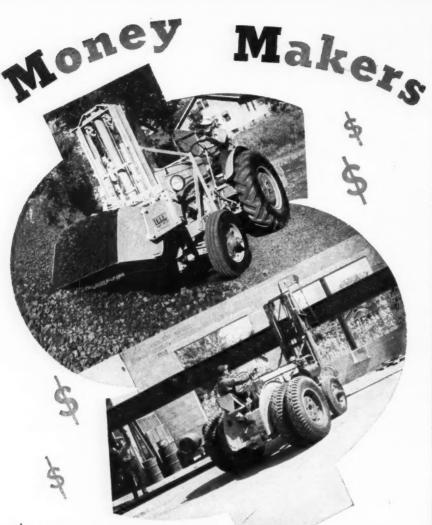
See your REO dealer before you order any truck



Notarized Proof! Hundreds of Reo dealers throughout the U. S. are ready to serve you with skillfully trained mechanics using genuine Reo parts . . . as are the many Reo Distributors and Factory Branches shown on the map above.

Notarized Proof! A Chicago garage serviced € major Reo units in 20% less average time than required on competing trucks. (Copies of complete affidavits available on request.)





\$AVINGS THROUGH Easy handling

MM INDUSTRIAL TRACTORS greater mobility and utility

MM Industrial Tractors handle heaviest loads easily, speedily. Short turning radius, wide range of speeds, and easiest steering ever offered in equipment of this capacity assures cost-cutting mobility; efficient attachments for lifting, loading, materials handling, and maintenance work assures profit-boosting utility. YOU can cut your costs with economical, versatile MM Industrial Tractors.

MM POWER UNITS

Economy, dependability and long life performance is a matter of sound engineering. MM Power Units have it! Eight sizes from 21 H.P. to 242 H.P. are serving industry in a wide variety of applications that call for rugged power units of proved performance.

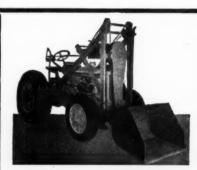




MINNEAPOLIS-MOLINE

POWER IMPLEMENT COMPANY MINNEAPOLIS 1, MINNESOTA (Continued from page 142)
troit, Mich., is distributor of General
Motors series 71 diesel engines. Sales
representatives in Michigan include
A. S. Richardson and R. S. Reeves,
Grand Rapids; M. M. Hughes, Kalamazoo; D. S. Kurtz, Monroe; S. G.
Huestis, Cadillac; and C A. Cornell
and Elden Livingstone, Alpena.

DISTRIBUTORS - Prairie Equipment & Radiator, Ltd., Winnipeg. Man., has been appointed Manitoba distributor for R. G. Le Tourneau, Inc., Peoria, Ill. . . . L. D. Litsey is Chicago area representative for worn gear speed reducers for the De Laval Steam Turbine Co., Trenton, N. J. . . . C. W. Scholvin is district representative for the LaPlant-Choate Mfg. Co., Inc., Cedar Rapids Iowa, in New York, Pennsylvania, Maine, Maryland, New Hampshire, Connecticut and eastern Canada . . Chas. K. McArthur will represent The Dorr Co. in Washington, Oregon and Idaho, his office being in the Lloyd Bldg., Seattle 1, Wash. . . . The Barco Mfg. Co., Chicago, producers of gasoline hammers, drillers and rammers, has announced that the territory of the Koontz Equipment Corp. of Pittsburgh, exclusive distributor of Barco gasoline ham-(Continued on page 146)



FRONT END LOADERS

for Industrial Tractors
Extensible Booms—8' Lift
1/2 and 5/8 cu. yd. Capacity

Other Products

CONCRETE VIBRATORS

Gasoline Engine and Electric Motor Driven Models

HEATING KETTLES

for Asphalt and Tar

AGGREGATE DRYERS

for Stone and Sand
ASPHALT PLANTS

Portable — Stationary WRITE FOR CIRCULARS

White Mig. Co.

ELKHART

INDIANA

"is it fun to be fooled?"

We don't think so ... not when it comes to paying out hard-earned dollars for equipment. As manufacturers, we don't like to be fooled in our purchases of machinery and materials. We prefer to know. And we want you to know!

This is the reason why we have formed the Truck Mixer Manufacturers Bureau . . . an organization founded on service to you. We have set up certain standards that must be met by each and every truck mixer. The Bureau rating plate, prominently displayed on a truck mixer, is your assurance of full rated capacity . . . your protection against "out-

law sizes." Conversely it is our protection against the loss of your "good will"... of the loss of your confidence in our product through inaccurate capacity ratings.



Truck Mixer Manufacturers Bureau

Affiliated with The National Ready Mixed Concrete Association

BLAW-KNOX DIVISION Pittsburgh, Pa. CHAIN BELT COMPANY

Milwaukee, Wis.

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CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.
THE JAEGER MACHINE COMPANY

THE JAEGER MACHINE COMPANY
Columbus, Ohio

RANSOME MACHINERY COMPANY
Dunellen, N. J.
THE T. L. SMITH COMPANY

Milwaukee, Wis.



DO YOU HANDLE ASPHALT **JOBS LIKE THIS?**

- · PATCHING
- DRIVEWAYS
- . TENNIS COURTS
- FACTORY FLOORS
- WATERPROOFING

Or perhaps you have other types of asphalt problems! If yours is an asphalt problem here is the unit you need to

handle those fast, small mixes.

The Foote Kinetic Mixer is portable — rubber-tire mounted. It is easily operated. It's fast and saves time. Mixes right on the job. Delivers 3 cu. ft. in 30 seconds. New mixing principle assures thorough mix. Ask for folder K-100 and name of representative nearest you.

THE FOOTE COMPANY, INC.

Subsidiary of Blaw-Knox Co.

1910 State Street Nunda, New York

See ad on Page 119

Builders of ... Adnun Black Top Pavers, MultiFoote Concrete Pavers and Foote Kinetic Mixers





ATERLOO FOUNDRY CO., WATERLOO, IOWA

(Continued from page 144) mers in western Pennsylvania for many years, has been extended to include northeastern Ohio and the Cleveland area. Cincinnati's Highway Equipment has been appointed distributor in southwestern Ohio and the sections of Kentucky and Indiana adjacent to Cincinnati. The Construction Machinery and Supply of Toledo will be distributor in northwestern Ohio. Flesch-Miller Tractor Co. of Lawrence, Ind., has been named distributor in that state, and the Loveland Equipment Co. of Syracuse for the central New York area.

Edmund B. Besselievre is now in charge of all sanitary engineering work for the foreign division of The Dorr Co., 570 Lexington Ave., New York 22, N. Y. . . . The Gorman-Rupp Co., Mansfield, Ohio, has announced the appointment of Walter O. Duehler as vice-president in charge of engineering and the design and engineering development of a complete new line of standard centrifugal pumps for industrial and municipal use; Warren E. Rupp is chief engineer . . . E. A. Wert is vice-president in charge of engineering for the Ric-Wil Co., Cleveland, Ohio, makers of insulated pipe conduit systems . . J. Carl Bode has been elected president of the National Carbide Corp. to succeed L. A. Hull . . . In recognition of 50 years service in the building and housing industry, Adirondack Homes Co. will give a dinner for its president, Harry Levey, on July 12.

PERSONALITIES - Kenneth A. Helmly is manager of the Columbia, S. C., branch of the Southern States Iron Roofing Co. . . . W. E. Jubien is Washington representative of Barium Steel Corp., New York . . . H. W. Dickson is manager of the Capitolaire division of the U.S. Radiator Corp. A. J. Reebel is acting manager of the Cleveland branch and A. X. Bergeron acting manager of the St. Louis branch . . . Danforth K. Heifle is chief field engineer for R. G. Le Tourneau, Inc. . . . P. F. Bauer is manager of the central region of Allis-Chalmers general machinery division at Cleveland, Ohio . . . New vice-presidents of the Gorman-Rupp Co., Mansfield, Ohio, are: Warren E. Rupp, Walter O. Buehler and Kenneth H. Cadigan . . . Harlowe Hardinge, president of Hardinge Co., Inc., heavy machinery manufacturer, has just returned from an 11,000-mi. trip contacting plant operators in various parts of Canada and the U.S. . . . Gilfray Ward has been named vicepresident of the Kellog division of the American Brake Shoe Co. at Oakland, Calif. . . . John C. Painter is now district representative of The Galion Iron Works & Mfg. Co. in New York, Pennsylvania and Maryland . . . Gerald Bogner is engineer (Continued on page 148)

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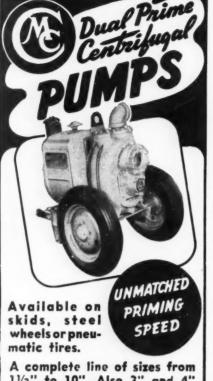
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Fast Modern Performing One, two and three bag sizes.

CONSTRUCTION MACHINERY CO'S

WATERLOD, IOWA

Fast, compact, efficient—Built with Timken bearings Machined drum tracks-Silent transmission and other plus value features. See the CMC Distributor today—or write for catalog.

CONSTRUCTION MACHINERY CO'S WATERLOO, IOWA

(Continued from page 146)

and representative for Kennametal, Inc., of Latrobe, Pa., working out of the New York office at 6 West Broadway. Delmar Baker is engineer and representative at the Chicago office, 9 No. Jefferson Street . . . Election of Leonard C. Barr, Maurice A. Enright, and William J. Kane as vice-presidents of Morton-Gregory Corp., Toledo, Ohio, has been announced by Henry J. Morton of Detroit, president.

MISCELLANY-Greer Steel Co., Dover, Ohio, has become the eighth company to be licensed to manufacture "Cor-Ten", high-strength, low-alloy steel . . . B. F. Goodrich Co. recently has completed an industrial laboratory, the Research Center, half way between Akron and Cleveland, . Effective July 1, Consolidated Steel Corp. will change its name to Consolidated Western Steel Corp. . . . Allis-Chalmers, Milwaukee, Wis., has organized a new Mid-Atlantic territory under William Arthur, with headquarters in Philadelphia, Pa. . . . All existing steel ingot production records were broken at the Fontana plant of Kaiser Co., Inc., during May according to the company's vice-president A. B. Ordway . . . The annual meeting of more than 200 plant officials of the Douglas Fir Plywood Association was held recently in Tacoma, Wash.

STEEL CONSTRUCTION

TERRY **Steel Contractors** Incorporated

BUILDINGS TOWERS

BRIDGES **TANKS**

STEEL FABRICATORS **ERECTORS**

your inquiries will warrant our prompt attention

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MUrray Hill 5-0166-0167-0168

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With the construction jobs that lie ahead for every engineer, it is only up to you to assure yourself of superior workmanship—ensure your work of the finest structural qualities—by providing yourself with this up-to-the-minute revision of the famous Hool and Kinne Library—the books which for years have been providing structural engineers with the facts they need on every problem concerned with the design and construction of civil engineering structures.

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HOOL AND KINNE'S

STRUCTURAL **ENGINEERS**

Library

Revised by R. R. ZIPPRODT,

And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

COVERS the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members and the design of their connection with other members.

EXPLAINS the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portal bracing.

GIVES details of design and construction of steel, timber and concrete structures of all types.

We invite you to inspect these books for your-self, because we know that that is the one way you can realize their true value to you, and to the jobs that you do. You want to back up your own knowledge with sure, easy-to-get facts, and you want to make your workmanship worthy of your best time and effort. Therefore, the best investment you can make is to add to your own experience the tested working aids given in this dependable reference library.

Send for all six books, and allow them to go to work for you on your toughest problems.

SEND THE COUPON FOR FREE 10-day TRIAL EXAMINATION

Engineer prove sa and \$5.0 the book	y send me Hool and Kinne's Structural's 'Library for my inspection. If the books tisfactory, I will send \$4.75 in 10 days do per month until I have paid the price of its, \$29.75. If the books are not what I agree to return them postpaid within 10 receipt.
Name	
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Old road made hairpin curve (center background), then curved again before reaching existing bridge. Here work on second abutment is under way.

RELOCATION on Pennsylvania's Route 29

In the interest of safety, the Pennsylvania Department of Highways recently authorized two miles of relocation on picturesque Route 29, highway running north from West Chester. Located in the Zieglersville-Schwenksville area, the project eliminates a narrow, outmoded bridge in a winding section of road by providing a new bridge with straight approaches. These scenes show phases of the construction, handled by John F. Keelor, Perkiomenville, Pa. Structural steel, bridge reinforcing, bar mats and dowel units were furnished by Bethlehem.

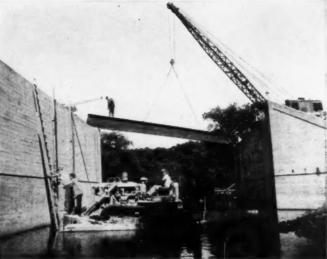
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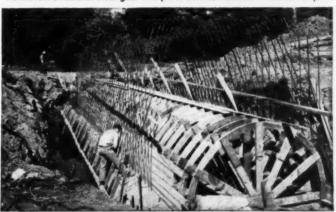
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Bethlehem Structural Steel goes into place between abutment and center pier.



Bethlehem Reinforcing Bars shown in place in one of three new culverts



John F. Keelor (center), contractor, discusses project with A. J. Bedard (left), assistant district engineer, and Elwood Hummell (right), assistant district construction engineer, both of Pennsylvania Department of Highways



Completed bridge ready for traffic. Structure has 180 tons of structural steel, more than 50 tons of reinforcing steel.





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